

RECORD

L-Label made

F. R. Fosberg

Collection Number Book

#10

No. 20614 - 21392

Aug. 5 - Dec. 5, 1943

Colombia

If found, please return

to F. R. Fosberg

403 Edificio Samper Brush,
Av. Jimenez de Quesada

Bogotá, Colombia

n R. F. D. #1, Holmes Run Road
Falls Church, Va.

and receive reward.

<u>Pages</u>	<u>Pages</u>
	COLOMBIA
2-9	<u>Mariño</u> , Morasurco Ridge, n.e. of Pasto, Cliffs n. of Rio Bobo, Bridge across Rio Guitará, at confluence of Rio Bobo, Rio Guabo, Piedrancha, Rio Guabo, Curcuelo area, above San Miguel,..... 21042-21108 100-111
8-35	- Quebrada Panacual, ridge w. of Quebrada de Pueblo Viejo, Rio Guabo, mouth of Quebrada de Pueblo Viejo, n.e. ridge Volcan Qualcalá, head of Rio de El Cristo, upper Rio Gualcalá, Headwaters of Quebrada (Rio) de El Cristo, upper e. slope of Volcan Gualcalá, near Gua- chique, s.e. slope of Volcan Gualcalá, slopes below Mallama, Mongón on Rio Telembi, s. of Barbacoas, along Rio Guagui 21109-21215 112-137
34-45	
46-51	- Trail west of Pimbí, bet. Pimbí and Rio Telembi, Rio Telembi e. of Barbacoas, trail n. of Pimbí, e. of Barbacoas, n. of Junín, Encano, Laguna de La Cocha, Putumayo, Morasurco Ridge, n.w. of Pasto, Hills s.w. of Chachagui, n. of Pasto, La Cruz, Narino, ridge bet. Rio Tajumbina and Quebrada del Salado, e. of Volcan Dona Juana, above San Bernardo, valley of Rio Quina across from San Jose, bet. La Union and Cartago, Narino, Rio Santo Domingo, e. of Tacueyo, Rio Palo bet. El Palo and Tacueyo, Cauca, Palmira, El Valle grounds of experiment
52-54 21216-21311 136-159
56-63	- S. of Bugalagrande, El Valle, n.e. of Circasia, w. of Salento, La Aguadita, Canyon of Quebrada Aguabonita
62-77 21312-21326 160-163
76-87	
86-97	
98-99	

Collection and Field Note Book

1.

No. 10

Aug. 5, 1943 - Dec. 5, 1943

(Nos. 20614-21392)

COLOMBIA

Cundinamarca, s. of Rio Corrales, Pasca,
trail from Pasca to La Constancia, top ridge
between Rio Juan Viejo and Quebrada Atadero,
..... 20614-20650

Paramo de Sumapaz, hills above Laguna Larga,
near Laguna Negra, Quebrada Honda n. of Nevado
de Sumapaz, Cund., near crest of Alta San Juan,
near Headwaters of Rio San Juan, top of Alto
San Juan,..... 20651-20792

Paramo de Sumapaz, description

Paramo de Sumapaz, Rio San Juan, at Cerro Los
Amarillos, Quebrada El Tunal (Rio Gobernador),
Rio Arroz 20793-20811

Description (from p. 45)

Rio Arroz 20812-20853

Cordillera de las Cruces s. of Rio Arroz, Rio
Grande (?) main stream s. of Cordillera de las
Cruces, Rio del Nevado, e. end of Cordillera de
las Cruces, Quebrada el Cariño, 2nd main affluent
of Rio Arroz, Quebrada de los Tambos, Quebrada
Pedregal..... 20854-20922

Sumapaz region, confluence of Rio Arroz with
Rio del Nevado 20923-20973

Paramo de Sumapaz & Sumapaz region 20974-21031 ..

Cundinamarca, Cauca, Falls of Tequendama, ridge
bet. Rio Piedras and Rio Quilcasé, n.e. of
Dolores, Cauca, s.e. Popayán w. side of valley
of Rio Guachicono 21032-21041

<u>Pages</u>	<u>Pages</u>
	COLOMBIA
	<u>Maríño</u> , Morasurco Ridge, n.e. of Pasto, Cliffs n. of Rio Bobo, Bridge across Rio Guaitará, at confluence of Rio Bobo, Rio Guabo, Piedrancha, Rio Guabo, Curcuelo area, above San Miguel,.....
 21042-21108 100-111
2-9	- Quebrada Panacual, ridge w. of Quebrada de Pueblo Viejo, Rio Guabo, mouth of Quebrada de Pueblo Viejo, n.e. ridge Volcan Gualcalá, head of Rio de El Cristo, upper Rio Gualcalá, Headwaters of Quebrada (Rio) de El Cristo, upper e. slope of Volcan Gualcalá, near Gua- chique, s.e. slope of Volcan Gualcalá, slopes below Mallama, Mongón on Rio Telemi, s. of Barbacoas, along Rio Guagui
8-35 21109-21215 112-137
34-45	- Trail west of Pimbí, bet. Pimbí and Rio Telemi, Rio Telemi e. of Barbacoas, trail n. of Pimbí, e. of Barbacoas, n. of Junín, Encano, Laguna de La Cocha, Putumayo, Morasurco Ridge, n.w. of Pasto, Hills s.w. of Chachagui, n. of Pasto, La Cruz, Narino, ridge bet. Rio Tajumbina and Quebrada del Salado, e. of Volcan Doña Juana, above San Bernardo, valley of Rio Quina across from San Jose, bet. La Union and Cartago, Narino, Rio Santo Domingo, e. of Tacueyo, Rio Palo bet. El Palo and Tacueyo, Cauca, Palmira, El Valle grounds of experiment
46-51 21216-21311 136-159
52-54	- S. of Bugalagrande, El Valle, n.e. of Circasia, w. of Salento, La Aguadita, Canyon of Quebrada Aguabonita
56-63 21312-21326 160-163
62-77	
76-87	
86-97	
98-99	

Collection and Field Note Book

No. 10 (Cont'd)

COLOMBIA

	<u>Pages</u>
Agua Bonita, above La Aguadita, s. of Pandi, Aurora e.s.e. of Cunday, La Colonia Agricola, Headwaters of Rio Cuinde Feo, w. slope of Cordillera de Altamisal, bet. Rio Cuinde Feo and Rio Cuinde Blanco... 21327-21341	164-169
- Description, Quina in region bet. Rio Sumapaz and drainage of Rio Cunday	170
- Other places suggested for exploration	171
- Hills west of Lagunas Guatavita, shores of Laguna Guatavita, Choachi, Crest of Cerro de Fonte, w. slope of Peña Blanca, e. of El Colegio,..... 21342-21392	172-185

COLOMBIA

Collection J. S. Granger and Rodriguez	188-194
--	---------

* * *

Collection and Field Note Book

No. 10

Aug. 5, 1943 - Dec. 5, 1943

(Nos. 20614-21392)

COLOMBIA

Cundinamarca, s. of Rio Corrales, Pasca,
trail from Pasca to La Constancia, top ridge
between Rio Juan Viejo and Quebrada Atadero,
..... 20614-20650

Paramo de Sumapaz, hills above Laguna Larga,
near Laguna Negra, Quebrada Honda n. of Nevado
de Sumapaz, Cund., near crest of Alta San Juan,
near Headwaters of Rio San Juan, top of Alto
San Juan,..... 20651-20792

Paramo de Sumapaz, description

Paramo de Sumapaz, Rio San Juan, at Cerro Los
Amarillos, Quebrada El Tunal (Rio Gobernador),
Rio Arroz 20793-20811

Description (from p. 45)

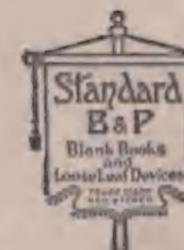
Rio Arroz 20812-20853

Cordillera de las Cruces s. of Rio Arroz, Rio
Grande (?) main stream s. of Cordillera de las
Cruces, Rio del Nevado, e. end of Cordillera de
las Cruces, Quebrada el Cariño, 2nd main affluent
of Rio Arroz, Quebrada de los Tambo, Quebrada
Pedregal..... 20854-20922

Sumapaz region, confluence of Rio Arroz with
Rio del Nevado 20923-20973

Paramo de Sumapaz & Sumapaz region 20974-21031 ..

Cundinamarca, Cauca, Falls of Tequendama, ridge
bet. Rio Piedras and Rio Quilcasé, n.e. of
Dolores, Cauca, s.e. Popayán w. side of valley
of Rio Guachicono 21032-21041



Standard
Miniature Blank
Book

No. 662	7 $\frac{1}{2}$ x 5 $\frac{1}{2}$	200 Pages no Units
No. 663	7 $\frac{1}{2}$ x 5 $\frac{1}{2}$	300 Pages no Units
No. 664	9 x 5 $\frac{1}{2}$	300 Pages Units
No. 665	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	120 Pages Units
No. 667	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	200 Pages Units
No. 668	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	300 Pages Units

Made in the Following Rulings
Journals, Day or Cash Books, Double \$ and Cts.
S. E. Ledgers, Double \$ and Cts.
Double Entry Ledgers
Records with Margin Line

Made in U. S. A.

TO REORDER THIS BOOK, SPECIFY
NUMBER, RULING AND THICKNESS
AS INDICATED ON BACKBONE OF BOOK

A BOORUM & PEASE PRODUCT

Si encontrada remande a
Dr. F. R. Fosberg
418 Ed. Samper Bush
ave. Jimenez de Quesada 10-73
Bogotá, Col.
y recibe propina

L. S. Librarian

F. R. Fosberg
Collection Number Book
#10

No. 20614 - 21392

Aug. 5 - Dec. 5, 1943

Colombia

If found, please return

to F. R. Fosberg
408 Edificio Samper Bush
ave. Jimenez de Quesada
Bogotá, Colombia
n. R. F. D. #1, Holmes Run Road
Falls Church, Va.
and receive reward.



Standard
Miniature Blank
Book

No. 662	7 $\frac{1}{2}$ x 5 $\frac{1}{2}$	200 Pages no Units
No. 663	7 $\frac{1}{2}$ x 5 $\frac{1}{2}$	300 Pages no Units
No. 664	9 x 5 $\frac{1}{2}$	300 Pages Units
No. 665	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	120 Pages Units
No. 667	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	200 Pages Units
No. 668	9 $\frac{1}{2}$ x 6 $\frac{1}{2}$	300 Pages Units

Made in the Following Rulings.
Journals, Day or Cash Books, Double \$ and Cts.
S. L. Ledgers, Double \$ and Cts.
Double Entry Ledgers
Records with Margin Line

Made in U. S. A.

TO REORDER THIS BOOK, SPECIFY
NUMBER, RULING AND THICKNESS
AS INDICATED ON BACKBONE OF BOOK

A BOORUM & PEASE PRODUCT

Si encontrada remande a
Dr. F. R. Fosberg
408 Ed. Samper Bush
ave. Jimenez de Quesada 10-78
Bogotá, Col.
y recibe propina

FT.	M.	3000	925
0	0	3100	955
10	3	3200	985
20	6	3300	1015
30	15	3400	1045
400	30	3500	1075
200	60	3600	1110
300	90	3700	1140
400	120	3800	1170
500	155	3900	1200
600	195	4000	1230
700	235	4100	1260
800	250	4200	1290
900	280	4300	1325
1000	310	4400	1355
1100	340	4500	1385
1200	370	4600	1415
1300	400	4700	1445
1400	430	4800	1475
1500	460	4900	1505
1600	490	5000	1540
1700	525	5100	1570
1800	555	5200	1600
1900	585	5300	1630
2000	615	5400	1660
2100	645	5500	1690
2200	675	5600	1725
2300	710	5700	1755
2400	740	5800	1785
2500	770	5900	1815
2600	800	6000	1845
2700	830	6100	1875
2800	860	6200	1905
2900	890	6300	1940

FT.	M.	FT.	M.
6400	1910	9600	2990
6500	2000	9700	3030
6600	2030	9800	3060
6700	2060	9900	3090
6800	2090	10000	3135
6900	2125	10100	3165
7000	2160	10200	3200
7100	2200	10300	3230
7200	2230	10400	3260
7300	2260	10500	3290
7400	2290	10600	3320
7500	2325	10700	3350
7600	2355	10800	3380
7700	2385	10900	3415
7800	2415	11000	3445
7900	2445	11100	3475
8000	2475	11200	3505
8100	2515	11300	3535
8200	2550	11400	3565
8300	2580	11500	3600
8400	2610	11600	3630
8500	2645	11700	3660
8600	2675	11800	3690
8700	2705	11900	3720
8800	2735	12000	3750
8900	2765		
9000	2805		
9100	2835		
9200	2870		
9300	2900		
9400	2930		
9500	2960		

✓ Aug. 5 - ~~Sticks~~ small ravine,
south of Rio Corales, Pasca,
Cundinamarca

L 20614 ~~brushy~~ ravine in pasture.
Desmodium
in brush in ravine

L 4 15 *Passiflora*
in brush in ravine

L 16 *Piper*
in brush in ravine

L 17 *Ambrosia*

L 4 18 edge of pasture

L 4

L 19 *Galium hypoleucum*
edge of brush

L 20 *Castilleja*
edge of pasture

L 21 *Crocosmia*

L 22 *Castilleja*
edge of pasture

L 23 *Castilleja*
in brush

L 24 *Beparia*

tall herb, 3 m. tall, growing
up through bushes,
stems clinging to clothes,
when touched, fls. ^{magenta} purple
straggling bushy tree
about 6 m. tall, fls. white.
shrub 3 m. tall.

- perennial forming low
thicket-like clumps.
shrub about 3 m. tall,
branches somewhat drooping,
fls. white.

wine-like, elongate, climbing
through brush, fruits orange,
fleshy.

erect, glistening white-hairy,
distal parts of bracts red,
calyx green.

spreading herb, probably
annual, fls. yellow.
weak shrub 1.5 m. tall,
tips of upper bracts red, distal
half of calyx red, corolla
green above, with lower
edge orange yellow.

shrub 3 m. tall, leaves
glossy beneath, fls.
rose color, not sticky

L 20 24 *Polygala*
edge of pasture

L 25 *Vaccinium*
~~✓~~

L 26 *Meristis*

L 27

L 28 *Ranunculus*
edge of pasture

L 29 *Tournefortia*

L 30

L 31 *Alchemilla*
slope in pasture

L 32 *Tribolium*
pasture

L 33 in edge of Rubus thicket in
pasture

L 34 *Blechnum*
in Rubus thicket in pasture,
rocky place

L 35 *Daucus*
in thicket in pasture

L 36 *Quercus*
along river

L 37 *Quercus*
along river

L 38 *Salix*
bottom of ravine

fls. purple, root with
wintergreen odor.

small bushy tree, corolla
coral with green lobes and
crips. fruit immature
now, extensively twining
through bushes and trees.

shrub, fruits green
plants spreading from
root crown, fls. yellow,
fruits green.

shrub 4.5 m. tall, fls.
white

elongate, fls. white.

fls. greenish white

fls. yellow.

leaves rather stiff.

tree 10 m. tall, 3 dm. thick.

tree 15 m. tall, 10 dm. thick,
trunk gnarled.

rounded-topped tree, 10 m. tall
branches weeping-habit.

Aug. 5 - trail just above Pasca.

Rio Corrales, Cundinamarca 7500 ft

old stone wall along trail, limestone region.

20639

2

Muehlenbeckia

clambering through thicket, common

140

Peperomia

crevices in stone wall, common.

41

Polypodium

crevices in stone wall, common

42

Asplenium

crevices in stone wall, common

Aug. 7 - trail from Pasca to La Constancia, Cund., up the Rio Corrales to the fork of the Rio Juan Viejo, up the left bank of this to where it comes down through a great water-gap, conspicuous for miles down the valley. Just above the water-gap, at an altitude of about 3200 m. is La Constancia, which is nothing much more than a large house.

Up the valley ~~to~~ from Pasca the broad valley is cleared completely except for strings of vegetation along watercourse and the upper portions of the side ridges, which are still forested.

The willows in this region all have a weeping habit. They are scattered in the ravines ~~around the~~ town.

wine climbing in bushes and small trees.

sterile branches erect with abundant very fleshy leaves, fertile branches ascending.

with sparse, thin leaves.

rhizomes extensively creeping.

leaves thick, coriaceous.

leaves thin - coriaceous.

Just below the water gap the trail enters forest. The gap is well wooded with a bushy type of forest which seems to contain a great variety of species. The walls of the gap are tremendous vertical cliffs, almost bare of vegetation.

Above La Constancia what is visible is mostly pasture. *Eucalyptus globulus* is planted here, as is also *Cupressus sp. prob. benthamii*. This latter is said to be native in the region, but all I have seen looks as though it may have been planted. It varies considerably in habit.

20047 *Lepidium*
in heavily grazed pasture

✓ 44 *Veronica*
in heavily grazed pasture

✓ 45 *Acaena*
edge of cliff, low brush

✓ 46 *Hypericum brathys*
edge of cliff in low brush

✓ 47 *Hypericum*
edge of cliff in low brush

Aug. 7 - top of ridge between Rio Juan Viejo and Quebrada Ataderos,
near head of this ridge, about
14 km. s.e. of Pasca, Cundinamarca
paramo ridge, wet ground

✓ 48 growing in tufts of *Hedysotis*

✓ 49 *Hedysotis*

✓ 50 *Hedysotis*

Aug. 7, - Hills above Laguna Larga,
headwaters, (probably) of Rio Negro,
25 km. e. of San Bernardo, Cund.
Open paramo, springy
and seeping with water.

✓ 51 abundant

from ~~the~~ gnarled woody
- rootstock
- reclining, fls. pale blue
shrub
forming low rounded
- mounds.

- shrub 0.5 m. tall, flowers
- yellow. "chite"
low shrub, flowers yellow.

forming compact tufts
mat-like, spreading by
creeping over ground; flower
white to purplish.

depressed shrub, growing
taller in sheltered places,
observed from 10000 ft. alt.
on up.

an extensive paramo, with
at least 2 species of
Copestylum very abundant, a
rounded, privet-like shrub
quite abundant.

forming dense, stiff tufts,
inflorescences not abundant, purple.

20452 *Alchemilla* common among hummocks, with 20452

4 53 common among hummocks, with 20452

54 *Paepalanthus* ^{not spots} common, forming small cushions

55 ^{not common} not common

2 56 *Bartschia* common

57 *Eryngium humile* not common, in very wet spots

58 very rare, only two plants seen, in mud.

5 59 *Hedysotis* common, covering hummocks

60 *Elaphoglossum* not common, on top of hummocks.

Aug. 3 - near Laguna Negra, just below Laguna Larga, headwaters of (probably) *Rio Grande*, 25 km. S. of San Bernardo, Cund.

A small finca, raising chiefly potatoes in a more or less sheltered place among great rocky hills.

61 *Blechnum* rocky ledge.

62 *Piperomia* rocky ledge, sheltered by Blechnum

spreading, stiff, green.

spreading, soft, gray

fls. white.

forming small cushions erect

erect, purple, fls. and bracts purple.

involucres stiff, greenish-black outside, white within, fls. whitish, fls. bright blue, ^{bead} level with ground, cup shaped with edges flaring

forming a thick mat, rooting at nodes, leaves in 4 ranks, fls. white

to purplish
fronds erect, infolded so as to be cymbiform.

This is agriculture reduced to its lowest and most difficult terms. Potatoes, a few onions, and a cow.

The vegetation is pure paramo, *Espeletia*, *Castilleja*, *Hypericum*, a few other small shrubs & many tufted herbs.

Rhynchosia short erect, not evident above ground, fertile fronds erect, sterile ascending. leaves fleshy.

12

1943 - Colombia

20663

*Lupinus*growing near garden but said to be
native64 *Hedrania*growing on thatched roof of
house.Aug 8 - Guatrade Hots., one of headwaters
of Guatrade, Cabra, 10 Km. north of
Nevado de Sumapaz, Cund. 10000'
small grassy flat along stream
in paramos, wet ground65 *Geranium*

scattered in matlike vegetation

66

forming a thick mat

67 *Valeriana*

scattered clumps

68 *Halenia*

fair sized colony near stream

69 *Halenia*

scattered plants with * 20663

70

71 *Lemnaceae*72 *Lysimachia*

common

73 *Hypericum*

common

74

scattered small colonies

Paramo de Sumapaz

13

erect suffrutescent herb
1 m. tall, infl. erect, flowers
magenta-purple with central
part of banner yellow.
large rounded clump,
intricately branched, petals
white, split.

fls. white

fls. white

from a thick woody root
fls. white, infl. ~~pedicels~~
plant and fls. pall green.
plants in ^{small} clumps.
petals white, plants caespitose.erect clumps, involucres
maroon, rays bright purple,
disk reddish brown, heads
nodding
erect shrub, 1 m. tall, involucres
yellow, fls. whitish.
erect, forming small clumps,
fls. yellow.
low spreading clumps, fls. yellow.
erect, ~~caespitose~~, heads nodding.

14

1947 - Colombia

20675 *Hypochaeris*
abundant throughout region
scattered near stream

Aug. 8 - crest of alto Penjuan, in a
small pass about 10 km. n. of Nevado
de Sumapaz, west of quebrada Rabona
open pine-moss slope, with 4000 m.
abundant *Espelletia*.

20677 *Espelletia*
abundant, growing with #20679
with no apparent intergradation.

20678 *Chnequea*
abundant over whole region

20679 *Espelletia*
abundant over whole region,
here partially giving place to
#20677, not intergrading.

Aug. 9 - west of Cuchillo Andabobo lie
laguna Andabobo, a group of small
marshy lakes. The vegetation
here merits a much closer

Paramo de Sumapaz

15

erect shrub 2 m. tall, twigs
erect, fls. yellow
erect shrub 1 m. tall, gray.

rosette on top of stem
about 4 cm. thick, covered
with old leaf bases, making
the whole about 15 cm. thick,
about 1.5 m. tall, heads
nodding, rays yellow.
erect, about 0.8 m. tall here,
in more sheltered places
much larger, forming small
brakes several m. tall, some
but not all plants in flower.
rosette on top of stem about
6 cm. thick, covered with old
leaf bases, appearing about
15 cm. thick. stem of this
plant about 1 m. tall, others
up to 2 or 2.5 m., infls.
spreading, golden-yellow,
heads nodding, fls. yellow.

study than is possible riding
by on a mule. Seems to be a
good development of aquatic
and marsh plants.

✓ Aug. 9 - Valley of ~~q. Raboso~~, high on ~~eastern slope~~ of Alto San Juan 9 km. north of Nevado de Sumapaz, a small cirque-like valley facing south with a tiny woods of a few ~~tree~~ ferns up to 6 m. tall. The paramo has been burned over relatively recently.

20630 *Urtica*
under ~~larch~~ trees, abundant
but mostly sterile

21 abundant under trees

22 on ~~dry~~ mossy banks, common

23 *Vaccinium*
on mossy banks and ledges, common

24 *Ribes*
common on ravine sides

25 *Gentiana*
very rare, few plants found on eroded ~~rock~~ ridges.

26 *Cardamine*
wet ravine bottom

27 *Epilobium*
wet ravine side, in clumps of other plants

28 *Erigeron*
exposed ledges

29 *Baccharis*
exposed ledges and eroded ridges, with # 20640

woods surrounded by open paramo. Small rivulets descending through the woods, ground covered with low plants, mostly mat-formers or rosettes, and mosses.

weakly ascending,
strongly stinging
loose tufts, infl.
- drooping
mat-forming, brittle
fls. greenish-white.

erect ~~up~~ or ascending
shrub, up to 1 m. tall, fls.
dull purplish red, fruit
reddish-green, not quite ripe.
fls. dull purple.

weak, prostrate to ascending,
fls. white.
fls. deep magenta,
plant reddish.

fls. white with purplish
tinge, plant caespitose, gray.
prostrate, buds purple,
fls. whitish. ♀

18

1943 - Colombia

20690 *Baccharis*
exposed eroded ridges & ledges, with #20689

20691 *Baccharis*
exposed ridge, with #20692

20692 *Baccharis*
exposed ridge, with #20691

20693 *Epilobium*
exposed ridge

20694 *Epilobium*
steep slope at foot of cliff, in
clump of other plants.

20695 *Bromus*
in woods on slope at foot of cliff.

20696 *Hydrocotyle*
wooded base of cliff

20697 *Stellaria*
ledge on cliff

20698 cliff and slope at foot of cliff, abundant

20699 *Senecio*
ledges on cliff, common

20700 *Senecio*
dominant and only tree in woods.

20701 on cliff, ~~not~~ common, forming
clumps, mostly out of reach

20702 *Polystichum*
common on slope at base of cliff.

20703 occasional in woods

Paramo de 'lunapaz'

19

prostrate, buds grey, fls. white

- ♀

- shrub 1 m. tall, erect, ♀

- fls. white

- shrub 1 m. tall, erect, fls.
white. ♂.

- mat-like, fls. pinkish.

- fruit red, likely immature.

- plant scarcely reddish,
calyx dark red, corolla white.

creeping

forming a loose mat,
flowers white.

- reclining herb, m. long or
less, ~~gray~~, ascending at
tips, gray, involucres maroon,
rays bright purple, disk red-
brown.

- decumbent at base, a coarse
herb, fls. yellowish brown.

- ~~gray~~ gnarled tree up to 6 m. tall,
fls. yellow, only occasional
branches in flower.

herbage glaucous, fls.
bright lemon yellow.

Rhizome branched, forming
hummocks, fronds strictly erect.
erect shrub 2 m. tall,
fruit black.

20 *Castilleja*
abundant on slope at base of cliff

20704 *Lupinus*
abundant on slope at base of cliff

20705 *Lupinus*
abundant on slope at base of cliff

20706 *Lupinus*
growing in very dense vegetation on cliff.

20707 *Cynoglossum*
common in region, especially in wetter places.

20708 *Acaena*
common on exposed ledges and slope

20709 *Jamiesonia*
occasional on ledges and other exposed places

20710 *Isrysiphonium*
rare on ledges

20711 *Bartschia*
common in exposed places

20712 *Carex*
common, especially in depressions

20713 *Oenothera*
common in exposed ledges, banks

20714 *Oenothera*
common on moist banks and violet margins.

20715 *Oenothera*
occasional on exposed moist banks.
(possibly depauperate form of "20706.")

20716 *Alchemilla*
very abundant in exposed places

spreading stems suffrutescent at base, branches erect, calyx red distally, corolla green with lower edge orange.

herb forming large decumbent masses, fls. violet.

fls. lavender.

caespitose, lower leaves decaying into a gelatinous mass, fls. from pale blue to white.

rosettes flat to ground, scapes ascending.

rhizome deeply buried, ponds strictly erect.

erect, fls. yellow.

rosets and flowers purple.

deep based, loose spreading tufts, culms ascending.

rosettes tight to ground, loosely caespitose, heads yellow.

prostrate, fls. yellow, closed in morning.

fls. lavender.

very prostrate.

22 1943 - Colombia

20717 *Nestea grandiflora*
mossy banks

1 18 *Lagina*
mossy banks

1 19
mossy banks

2 20 ~~*Senecio*~~ *S. Eri*
common in ~~open~~ open places

2 21 *Rumex Tolimensis* Wedd. ^{det. N.C.F.}
common in wet places

22 common in rivulets and oxy places
with # 20724, no intergrades.

23 *Cardamine*
in rivulet

24 ~~*Adonis*~~
common in rivulets and oxy places
with # 20722, no intergrades.

flat turfy mossy place about
4 m. across at head of valley, appearing
to be a filled in pool, very wet,
with rivulet on one side.

25 from a grass
bank above pool

26 ~~all over~~

27

28

Paramo de Sumapaz 23

very prostrate, fls. greenish

prostrate, fls. white

fls. white

~~too~~ involucres purple,
fls. yellowish

- giant plant up to 3 m. tall,
the leaves dead at base
of fruiting & flowering plant,
other sprouts with leaves
and huge conical terminal
bud with great quantities
of mucilage, ocrea transparent
and filterable.

fls. white or pale pink,
closed in morning, open
about noon, ~~all~~

fls. white

fls. purple, closed in
morning, open about noon.

forming a dense spiky turf.

- spikes erect, sticking out of moss.
fls. white.

24 1943 - Colombia

20729
2 30 geranium
1 31 Ranunculus
in wettest part
32 dominant plant in part of pool
2 33
1 34 rare,
2 35 rare
1 36 Isoetes triquetra A. Braun det. H.P. Fuchs 1960
only one plant found
2 37 Cardamine
in a slightly raised, grassy
part of turf

Aug. 10 - same loc.
a similar boggy spot, but
somewhat older, more hummocky.
(a few plants from here included
with yesterday's when they seemed
obviously the same.)

38 Epilobium
in deep moss-turf

4 39 in shallow water forming a
dense growth.

1 40 Lysimachia
on hummock

2 41 Geranium
common in deep moss turf

25
Paramo de Sumapaz

heads whitish, button-like.
fls. white.
fls. yellow.
forming dense ~~scrub~~ turf.
fls. white.
erect
tops of grills well below
surface of turf making
a small depression.
prostrate, fls. white.
fls. white.
fls. pink

26 1943 Colombia

20742

in deep moss turf

wet ravine bed covered
with deep moss and
grassy hummocks

7 43 on hummock

44 *Castilleja*
in deep moss and grass

45 ~~go~~
on hummock

46 ~~go~~
on deep wet moss

47 *Bromus*
on hummock

48 *Carex*
on hummocks, common

49 ~~go~~
on hummocks

50 ~~go~~
on hummock

cliff and slope at base,
with wet ravine at bottom.

6 51 *Sugilia*
abundant on cliff, on tiny
ledges and in crevices.

7 52 ~~go~~
wet ~~the~~ bottom of ravine, not
shaded.

53 *Argyella*
wet bottom of ravine, not shaded.

Paramo de Sumapaz

27

fls. blue

stiff large clump.

erect bracts ~~are~~ scarlet
distally, calyx green, corolla
green but apparently not
exserted.

infl dark purple.

prostrate, fls. white.

infl. drooping, purple

deep rooted, small ~~stems~~
plants with few culms.
infl. stiffly erect.

infl. drooping

tufts

odor strongly like celery
fls. white.

forming round, hard, but
mosaice hollow hummocks.

28 1947 - Colombia

20254 *leptalea*
in crevices in *Azorella* (?) hummock

2-55 *leptalea*
mixed in *Azorella* (?) hummock

3-56 *leptalea*
slope at foot of cliff, one of the
dominant plants in steep slopes
and wet places.

3-57 *Escallonia*
W edge of hemis. woods on slope
at foot of cliff

exposed slopes and ledges
with seeps and rivulets
very abundant.

1-58 *Ranunculus*
mossy ledge

2-59 *Carex* sp.
rare, wetish slope

2-60 *Carex* sp.
common, exposed slope

3-61 *Geranium*
growing out of a dense mass
of overhanging vegetation

3-62 *Polypodium*
crevice under overhanging ledge
on face of large boulder

2-63 *Alchemilla*
high, exposed slope

2-64 *Woolly Sedge*
under edge of great boulder

2-65 *Potentilla*
wet slope

Paramo de Cumapay 29

deeply trough-shaped.

forming large stiff clumps.

stiff, spiny rounded
shrub 2 m. tall, fls. white,
calyx and ovary dark red.

fls. yellow.

erect with slightly decumbent
base, rays pale yellow, disk
greenish yellow.

erect with a long decumbent
base, herb, involucre maroon,
rays bright purple, disk yellow.
fls. pink.

fronds hanging down, rhizome
glaucous.

low, somewhat protected
by bushes.

prostrate, spreading, fls. yellow.

30

1943 - Colombia

20766 *Halecia*in deep wet moss turf
on wet slope.+ 67 *Ashemilla*

exposed slope

+ 68

exposed bare slope, ~~to~~ tightly
matted cushion vegetation+ 69 *Galium*in large clump of grass on
exposed slope.

+ 70

exposed slope

+ 71 *Asplenium*

crevice in boulder in ravine

+ 72 *Oxalis* (?)

exposed slope, rare

+ 73 *Asplenium*

under edge of boulder in ravine

+ 74 *Draba*abundant in moss-turf on
wet slope

+ 75

common on exposed slope in
cushion vegetation

+ 76

sides of ravine and open slope

+ 77 *Leptilon* (?)

in moss turf on very wet slope

+ 78a *Geranium*~~common~~ dominant in patches
of cushion vegetation on exposed slope

Paramo de Llumapay

31

fls. pale
green

stiff rounded clump.

stems prostrate, heads
on ~~so~~ ascending peduncles,
rays bright yellow striped
on back with brown, disk
brownish.

fruits green.

involucres maroon, fls.

pinkish.
erect.

roots fleshy

erect

fls. white

plant glaucous-grey, fls. blue

prostrate, peduncles erect.

forming soft hummocks,

fls. white.

fls. pink.

32

1943 - Colombia

20778

Lupinus

4

ledge near top of cliff

Aug. 11 - same loc.

79 *Carex*

common on lower slopes

80

common in wet places but
only one seen in bloom

2 81

*Carex*scattered in various habitats,
not rare

2 82

*Lupinus*wet slope, large colony,
mostly sterile

83

Gnaphalium

moosy bank

84

Geranium

moosy bank

85

Geranium

moosy bank

86

Senecio

moosy, boggy head of small stream

✓

Aug. 11 - top of ~~alt. San Juan~~
~~tops~~ above last. loc.
rocky wind-swept backbone of mountain

5 87

*Hedysarum*open spaces between bushes and
tufts of grass, also rock crevices

4700 m.

Paramo de Sumapaz

33

decumbent woody base
about 7 dm. long, covered
with dead leaves, ^{many} branchlets
at point of overturn, fruiting
spike columnar, 3 dm. tall.
(seed sample).spreading clumps, mature
inflorescence drooping
erect, rays pale yellow.

erect

erect. fls. blue-violet
banner with pink center
(same as 20778)forming small cushion, fls. ^{pink} ~~pink~~
different from *20735

forming small cushion

(different from *20774)

shrubs 1.5 m. tall, fls. pale
yellowprostrate with erect branchlets,
leaves on these conspicuously
4-ranked, fls. white to pale purple.
Mat thinner, not attached to
ground in exposed places, looser
and deeper when protected

20788 2 Paepalanthus
exposed ridge top

1 89 Elaphoglossum
partly protected rock crevice

1 90 Lycopodium
protected by clumps of grass

3 91 Lenesia
exposed rocks

1 92 among grass clumps, only one seen

Paramo de Sumapaz
Under this general name is included an enormous expanse of high country, from 3000 to 4500 or more meters in altitude, centering around the Nevados de Sumapaz, between the south end of Cundinamarca and Meta. It extends along the Cordillera Oriental for 60 km from Ocaña almost to El Hatillo, with branch ridges extending in all directions. Much of the high country is rolling, with high sharp ridges here and there, and many small lakes in the depressions. Many of the streams that radiate out originate in these lakes. The páramo separates the drainages of

forming dense cushions, fls. white erect, fronds revolute
stems mostly underground, leafy branches close to ground, spikes erect.
erect but somewhat gnarled, fls. pale yellow.
erect.

the Río Magdalena and the Río Orinoco, and the headwaters of the streams are so intertwined that it is often difficult to tell which way the water is eventually going. Sheep and riulets are everywhere.

Point 3 → This páramo is burned over every year, so that the grass will produce new tender shoots which are more palatable for livestock. Therefore it is difficult to tell what its original condition was. The destructive effects of Colombian so-called agriculture thus extend even to such forbidding areas as the páramo. A few tiny potato farms are scattered here and there, even

up as high as 3700 m. I have seen practically no stock up here to benefit by such burning. Growth is naturally very slow, so overgrazing is easy. However, I have seen few evidences of it in this páramo.

This description should be regarded as fitting only this particular páramo in its present burned condition. The burning doubtless is the reason why the ~~so~~ cushion plants are mostly small. The páramo is basically a grassland of principally three kinds of stiff bunch-grass. These all form dense hummock-like bunches, with stiff, harsh, sharp quill-like blades and occasional inflorescences. The bunches are spaced an average 4 or 5 dm. apart.

Another grass, possibly a Chusquea, although not climbing, is locally abundant. It too is very stiff, but it forms colonies rather than bunches and its blades are flat and lanceolate. In exposed situations it is low, but erect, 6 or 8 dm. tall.

when not in fruit. The spikes are several dm. tall. In wetter places it becomes 1 m. or more tall, and in sheltered places it forms small cane-brakes up to 3 or 4 m. deep.

The most characteristic plant of the páramo is *Espeletia* or "~~Feuerkugel~~" *frailejón*. This curious Composite genus strangely resembles the silver-sword of Hawaii, but has axillary inflorescences. It is a rosette plant, the large woolly rosette usually topping a post-like stem, composed of a pith, a woody cylinder, a softer outer cylinder, all about 6-10 cm. thick, surrounded by a coating of persistent leaf and inflorescence bases as thick again. The leaves are ~~lanceolate~~ oblanceolate spatulate or oblong, very densely woolly, and 2-3 dm. long. The inflorescences form a ring, projecting outward or upward somewhat longer than to several times as long as the leaves, and are even more densely woolly. The flower heads are yellow, enveloped

in the white or golden wool of the inflorescence, and are usually nodding. In the Paramos de Humapay are at least 4 perfectly distinct species of *Isopeltelia*, which can be told apart from a considerable distance.

These plants are thickly scattered over practically the whole paramo, from one to several meters apart. They grow to a height of 3 m. at the most, but of course are usually from stemless to one meter. They give a characteristically unearthly aspect to the paramo landscape.

A shrubby *Hypericum* from 0.5 to 2 m. tall is very common in most parts of this paramo. It has bright yellow flowers, much larger than those of the other half dozen species of this genus that abound here.

Shrubby Compositae - *Baccharis*, *Senecio*, etc. are locally common. A tree species of *Senecio* with leaves like a *Buddleia*, forms small patches of woods in sheltered valleys. The trees reach a height of 6 m.

Between the bunches of grass the ground is covered

by mosses and various moss-like cushion plants. A mat-forming *Hedysarum* is the most common. At a glance it resembles the *Pyxidanthera* of the New Jersey pine barrens. It begins at about 3500 m. and is still common at 4200 m. Several geraniums, a *Vaccinium*, an *Oenothera*, and one or two *Ericaceae* are very prominent. More rare are several *Compositae*, *Senecio*?, several species of *Hypochaeris*, *Cyperus* etc. A number of species of *Alchemilla* (?) and several *Umbelliferae* are also common. One of the *Alchemillas*, a prostrate one, forms much of the ground cover at high altitudes. A ~~so~~ cushion-forming *Hypericum* is also common.

Low hummocks of a & tiny *Paeonia* (*Circaeolaceae*) are seen everywhere.

Scattered here and there are several sedges, *Carex* (? sp.), *Rhynchospora*, etc. and a yellow *Lysimachium* which grows in the grass bunches. From the sub-paramo up to about 3700 m. a stiff, upright species of *Hedysarum*, probably *H. nitida* is very common. It is not seen at the higher altitudes. Inflorescences of several species in locally

met
yellow flowered
purple
at
fire is Hypericum
pink, fire is small
with it, fire is pink
blue flowered or the
scattered grass
Carex

River of Petobo
Forest floor
over 2000 m.
near river
over 2000 m.
near river

High
alt. with
purple
soil and
rocks

Great
forest
over 2000 m.
mostly
purple

common. Most of these are quite ordinary-looking, though one has large magenta flowers. One, however, is magnificent. It has a thick stem, often decumbent and quite woody at base, large dark green leaves, the bases with long white hair, and a columnar inflorescence up to 3 dm. tall, resembling, from a distance, one of the Canary Island Sabiñas. The rachis is about 3 cm. thick, hollow, and bears flowers spirally as close as they can be set on this column. The whole is 6 or 7 cm. thick. The flowers are violet, with a pink wedge on the banner. Linear bracts project beyond the flowers. The fruiting inflorescence, with crowded silvery-silky pods about 2 cm long, is as spectacular as the flowering one or more so.

In wet spots, seeps, springy places, ravine bottoms etc., a different flora is found. Usually still present are the bunch grasses. Ledges are more abundant. Moss forms a deep soft wet turf. In this are many

curious tiny plants of diverse families - Umbelliferae, Bragiacées, Ranunculaceae, Compositae, and, apparently rarest of all, an Iroctes. This, along with most of the others is found in ~~the~~ small open areas which are evidently filled in pools, tiny bogs but lacking Sphagnum. Only one plant of the Iroctes was found by me, completely immersed in the turf, appearing as a depression lined with stiff, thick, sharp quills.

A *Stellaria* (?) with leaves like *halimia*, forms soft hummocks here and there. A striking *Castilleja* with four-sided spikes and scarlet, imbricate bracts ~~is~~ ^{is} ~~occasional~~ presents occasional oriental looking finger-like columns. An umbellifer with an odor exactly like celery, but a low rosette plant is common on wet slopes, as is also one of the most curious things of all, an umbellifer (*Ligustrum*?) which forms hard, round hummocks of tiny rosettes, but which is almost hollow inside - filled only with

o. late
o. late and
D. ba and
a green fl.
Halimia at
common in
spring of
years.

loose decayed leaves and radiating stems. Also forming hummocks, but very prickly ones is a tiny juncaceous plant resembling *Orobolus*.

Just $\frac{1}{2}$ m. from the scrubby *Senecio* and other compositae, as well as a number of striking looking herbaceous compositae, one genus with brilliant purple or in one species yellow, ~~tufted~~ ^{nodding} heads, another perhaps the most densely woolly of all plants and with great, nodding heads without rays, are also common in these wet places.

Rock ledges and cliffs have several interesting things - *Bryonia*, a great *Draba* 6 dm. tall, a bright yellow *Erysimum* (?), a stiff, spiny *Escallonia*, a woolly *Senecio* with round revolute leaves, and several ferns, a couple of *Aspleniums*, one possibly a form of *A. trichomanes*, a *Woodia* or *Cyrtopteris*, two *Elaphoglossums*, stiffly erect, a stiff, erect, acaulescent *Polypodium*, and the curious *Juncaria* with its erect, delicate, unnatural looking flowers.

The sub-paramo slopes, below the paramo proper, a sort of transition to the forest below, present a curious superficial resemblance to the heath balds of the southern Appalachians. An abundance of Ericaceous shrubs - *Gaultherias*, *Fernettias*, *Vaccinium*, *Thibaudias*, and others not recognized, add to this aspect. However, a great variety of Melastomaceae of all sizes and colors, most of them strikingly beautiful, and the usual shrubby compositae, ^{shrubby} *Hypolepis*, and *Thrichelinbercia*, would be amazing indeed, in a heath bald. *Hedysotis* might be found in both, or at least near a heath bald, but the delicate *H. procumbens* bears little vegetative resemblance to the shrubby *H. nitida*.

This vegetation, greatly extended by destruction of the forests, is one of the most colorful in the tropics. There is always a riot of flowers in bloom.

The paramo region as a whole is a gigantic flower garden, or rather, rock garden. It is to be hoped that some of it may be spared for the future botanists and plant lovers to see.

Inset

Eryngium acule, a queer little rosette plant, is quite common here as in other paramos. Its heads of bluish-white flowers with white bracts are quite distinctive. More rare is a large spiny species of the same genus which at first sight would surely be mistaken for a bromeliad.

The term "paramo" means little to the average reader. To the average Colombian it simply means a cold, ~~and~~ ⁱⁿ desitable wind- and rain-swept high region. Botanists have attempted to use the term with various limitations. In line with ~~my~~ ^{the} idea of using popular terms in ecology to represent as nearly as possible what they mean to the people to whom they are a part of the language, I would suggest using the terms "paramo" and "sub-paramo" to designate that part of the northern Andes which lies above the limit of forest proper and below the line of perpetual snow. This would correspond, roughly, with what the Colombian

means by the term "paramo." However, no two Colombians seem to have exactly the same idea of it.

The division into "paramo" and "subparamo" zones, to correspond, roughly, with the ~~less~~ upper, predominantly herbaceous vegetation belt and the lower, predominantly shrubby belt seems justifiable on purely vegetational ground. Of course, there is no fixed boundary between these, just as there is no clear boundary between subparamo and forest. Clearly, overgrazing, fire, and other destructive agents have apparently greatly extended downward the subparamo from its original 10000 to 11500 ft. lower limit. This is probably due to the fact that paramo and subparamo are early, though usually arrested, stages in a succession in such a wet climate as prevails in high Colombia.

In any event, whether the terms have any true geobotan-

(ed. p. 52)

Aug. 12 - Rio San Juan, at Covo los Amarillos, where the river comes out of the Alto San Juan, Cundinamarca
paramo slope near river.

20793 *Miconia*

sheltered places where it is not

94 *Eryngium* ~~seen~~ ^{seen} occasionally in the paramo but common here.

Aug. 12 - Rio San Juan, just above San Juan.

^{Cundinamarca}
paramo slope 11,000 ft. above river 11300

95 *Espeletia*

96 *Spiranthes*

between grass clumps

97 *Fuchsia*

in clump of bushes in a tiny sheltered depression

Aug. 12 - Rio San Juan, near crossing just above San Juan.

^{Cundinamarca}
sub-paramo bush in valley bottom

98 *Vaccinium*

99 *Hedysotis nitida*

very common
Pernettya

20800

erect, cypress-like habit.

berries purple.

single or cespitose, heads purplish white.

acauliscent rosettes, cymes ascending, rays yellow, disk brown.

erect, flowers white.

~~fls.~~ erect weak shrub, growing up through other bushes, fls. rose-pink, pendent, fruit spherical, dark red, fleshy.

bush 1 m. tall, berries purple.

erect shrub 1 m. tall, fls.

white within, purple without

erect shrub 1 m. tall, fls. white, leaves reticulate beneath.

Aug. 13 - Quebrada Las Chóreas (R. Bejucal) just about 3 km. above its confluence with Rio Sumapaz, 20 km. s.s.e. of San Bernardo, Cundinamarca sub-paramo brush on 11,000 ft. side of valley.

70901 *Calceolaria microleptia* sp. *microleptia*

det. Molau

weak shrub 1-3 m. tall, fls. yellow. leaves rather glutinous.

Aug. 13 top of ridge between Quebrada Las Chóreas (R. Bejucal) and Quebrada Tunal (Río Gobernador), 20 km. s.s.e. of San Bernardo, Cund. Open páramo, no brush, 11,700 ft. somewhat grazed.

02 sap

wet ground between grass clumps

03 *Espellettia*

common over large area

fls. blue, heads closing immediately after gathering. stem about 3 dm. tall, others up to 1 m. or, in protected places, even 1.5 m. tall, ~~scarcely~~ ^{scarcely} of leaves, mostly ascending, of varying width ~~on~~ on different plants, those on this plant rather narrow, veins conspicuous beneath, inflorescences almost erect, wool golden or ~~gold~~, involucel, fls. yellow.

04 *Juncus*

large scattered colony in wet places

Aug. 13 - Quebrada El Tunal (Río Gobernador) 2 km. above its confluence with Río Lurupay, 27 km. s.e. of Pandi, Cundinamarca
 20305 *Gaiodendron*
 sub-paramo brush or low forest.

Aug. 14 - ridge s. of Quebrada El Tunal (Río Gobernador), 23 km. s.e. of Pandi, Cundinamarca
 sub-paramo on cut-over forest land
 06 *Castilleja*

07 *Galium hypocrateum*
 in clumps of vegetation
 08 *Lobelia tenera*
 in clumps of vegetation
 09 *Jameeria*
 lower side of boulders on slope

Aug. 16 - Río Arroyo

cut over forest, now of a paramo character, in place planted to potatoes, in place grazed.

10 on *Solanum tuberosum*
 11 *Apium*
 grazed slope

The forest here certainly once extended up to 11500 ft. and possibly to 12000. largely destroyed now, replaced by sub-paramo brush and paramo. shrub 3 m. tall, others even taller. flowers white, petals recurved.

upper bracts and calyxes
 scarlet, corolla green
 above, red beneath.
 climbing in bushes, fruit orange,
 fleshy.
 fls. lavender with yellowish
 center.
 large clumps, flowers
 erect.

forming the "potato" disease,
 said to cut the potato crop in half.
 older plants rounded, bushy,
 fls. white, strong oily odor. "spicy"

ical, plant-sociological, or phytogeographical significance or not interests me little. They are convenient designations for two types of vegetation with an aspect and floristic composition not duplicated elsewhere in the world or indicated by any other term, and of extraordinary beauty and interest. Of course, corresponding zones of dwarf vegetation exist at high altitudes on various tropical mountains. Geobotanists likely have a will invent a general term to include all of them. Paramo should likely be restricted to regions from Costa Rica southward to Ecuador (or possibly Peru). It is said that the northernmost paramo is that on Irazu¹² in Costa Rica.

Insel 2

In some areas an aculeaceous *Olechnum* with erect leathery leaves is one of the common plants, while in one or two sub-paramo localities a rather similar *Olechnum* with a tall trunk and spreading sterile fronds was seen. A shrubby *benecia* with terete green leaves and yellow flowers is also abundant in some areas.

Insel 3

It must not be imagined that the boundary of the paramo is always at 3,000 m. This is the lower limit of possibly natural subparamo vegetation. In places forest extends up to as much as 3,700 m. One slope of a mountain will be densely wooded, while another will be extreme paramo, apparently dependent on the exposure. Patches of paramo exist in depressions completely surrounded by forest. I suspect that temperature is the deciding factor, since paramo vegetation exists in ~~more~~ sheltered places where wind could have little influence.

Mount 4

Perhaps most remarkable of all is a giant *Rumex*, up to 2 m. tall, spreading by underground rhizomes. As the erect stems form giant inflorescences with leaf-like bracts, the leaves below die and the inflorescence ripens and dies. Meanwhile other shoots are emerging, the leaves very large, whereas, the huge ~~too~~ conical terminal bud covered by them and secreting great quantities of mucilage.

Araucaria, one of the most curious *Podocarpaceae* plants is not common in this region, but at least one species is ~~as~~ found locally.

20812

Panettia

common in brush appearing in pasture

13 *Gentiana*

rare in pasture

14 *Rhynchospora*

common

15 *Hypericum*

common in brush appearing in pasture

16 *Vaccinium*

common in pasture and brush above pasture

17 *Carex*

along rivulet

18 *Hypericum*

common in less grazed parts of pasture

19 *Gnaphalium*

weed in pasture, very common

20 ~~21~~ common everywhere in region21 ~~22~~

rare in wetish place

22 *Gnaphalium*

common weed in pasture and potato patch

23

in brushy place on ridge

24 *Polypodium*

on tree trunk in pasture

25 ~~26~~

common in ravines

26 *Senecio*

common over whole region

low shrub, corolla urn-shaped, white with ~~purple~~ red tips to lobes, fruit black, fleshy, erect, fls. purple.

small tufts, culms ascending or erect, erect, fls. yellow, leaves 4-ranked.

low shrub, fls. pink, berries purple.

small clumps, culms ascending, spikes pendent, fls. yellow.

small tufts, infl. erect, oily odor when broken "spic." erect.

low spiny shrub, 0.7 m. tall, fruits immature, said to be blade and edible when mature, slightly glaucous, esp. rhizomes.

shrub 2 m. tall, calyx and hypastrium red, corolla pale yellow, erect, brittle shrub up to 1 m. tall, buds yellow. Called "guasquin" and used for liver ailments, but this taken by local people from a book, really applies to another sp.

58 1947 - Colombia

20927 *Diagynidium*

common

28 *Geranium*

very common

29 *Lupinus*

common

30 *Asclepias*

weed in potato patch

31 *Lathyrus*

in bushes and tufts of vegetation

in pasture

32 *Equisetum*

common weed in potato patch

33 *Habenaria*

scattered in pasture

34 *Vicia*

in bushes and tufts of vegetation

in pasture.

35 *Fuchsia*

in bushy place

36 *Rubus*

common in bushy place

37

weed in potato patch

38 *Rumex acetosa* L.

common in patches everywhere

39 *Geranium*

common in pasture

40 *Alchemilla*

common in pasture

thickets

Paramo de Sumapaz.

59

tufts, flowers yellow,

spreading tufts, fls. pink.

"yerba del dolor".

stems prostrate, spreading
from root, racemes erect,
fls. violet with pink wedge
in banner.

prostrate

fls. purple.

"albergilla"

"cola de caballo"

fls. greenish-white.

said to cause death of newly
castrated ~~stags~~ ~~calves~~ if eaten.

fls. rose-pink, pendent.

low, spreading canes, glaucous.

fls. rose-pink

prostrate, fls. pink.

inf. red. "salvaje"

"pasto colorado"

spreading, prostrate with
ascending infl., fls. pink.

"yerba del dedo"

valued for pasture, spreading

by runners and holding soil "la plegaria"
shrub 3 m. tall, fls. white. "salvia grande"

60 1943 - Colombia

20842 *Baccharis*

common in pasture

L 43 *Monina*

rare in thickets

L 44 *Salvia*

pasture

L 45 *Tropaeolum*

steep slope above river

L 46 *Hedysotis nitida*

very common everywhere

L 47 *El*

pasture

L 48 *Castilleja*

pasture

L 49 Aug. 18 - same loc.

exposed, grazed paramo ridge

L 50 *Millettia*

grassy slope

L 51 *Odontonema*

common, but not much in flower

L 52 *Gaultheria*

very common

L 53 *Odontonema*

on small tree in sheltered place.

Paramo de Humapay 61

shrub 1 m. tall,

shrub 2 m. tall, fls. blue.

"tinto"

fls. deep crimson, infl. and calyx maroon. "salvia" vine, fls. vermillion with greenish tips to spur.

~~"Tobis"~~ "cobijs del indio".

shrub up to 1 m. tall, fls. white with lobes tipped outside with purple, buds purple.

prostrate, calyx purplish.

fls. pale bluish.

suberect herb, calyx and upper bracts scarlet distally, corolla green, with lower edge yellow distally.

rosettes clustered, hair on scape dark red, fls. butter-yellow small bushy shrub 0.5 m. tall, rays purple.

bracts and flowers dull

coral, root thick, fleshy.

low dense bush 0.5 m. tall,

but in sheltered places

forming a gnarled tree. Also

shrub up to 3 m. tall, trunk 3 dm. thick.

fruits slightly fleshy, purplish-green

fls. fleshy, greenish-yellow, lip

slightly marked with brown.

Aug. 19 - Rio Arroyo

W. W. Smith

A giant species of *Chusquea* is common here, but sterile. The canes resemble sugar cane, and are as much as 4 cm. thick, usually about 2.5 cm. They are used to form the horizontal part of the wattling of the mud and wattle houses, as well as part of fences, etc.

Aug. 19 - Cordillera, south of Rio Arroyo. ^{de los Cuchas}

Tribado
Padegal

20354 *Hydrocotyle*
in wet soil in trail

55 *Xyris*
on bare paramo ridge

56 *Chusquea*
common everywhere in paramo slopes

57 *Polypodium*
high rocky ridge

58 *Hedysarum*
high rocky paramo ridge
only seen in this vicinity, but
very abundant here.

59 *Hedysarum*
(same as above)

Crops cultivated here are potatoe (most important), wheat (a little), onions, *Vicia faba*, called "aba", and a kind of cabbage.

Trofolium repens and a round-leaved species of *Alchemilla* are favorite pasture plants. *Cupressus* sp. planted as ornamental.

Barley, radishes, carrots, amaracha said to be cultivated but not seen.

very prostrate
tufts

varying greatly in size
fronds erect

rounded dense bushes
1-2 m. tall, lower side of
leaf yellow, rest of leaf
bright green.

rounded bright green bush
1-2 m. tall, buds pinkish, fls.
white, under side of leaves yellow

main north affluent of Rio Grande
Aug. 20 - Quebrada Huembete south
of Cordillera de las Cruces.

Meta

20300 wet forest in deep ravine
Begonia
epiphytic and on ground, com.

61 *Polypropodium*
epiphytic

62 epiphytic

63 *Eupeltia*
subparamo brush, occasional

64 *Chusquea*
abundant in flat ravine bottom,
subparamo brush.

65 ~~66~~ occasional in forest
Blechnum
common locally in sub-paramo
brush and ~~at~~ edge of forest.

67 *Chusquea*
common in region.

68 *Fuchsia stegulata*
rare, near stream

(photo
of
different
plant)

stems fleshy, fls. pink.
fronds bent downward.
vine, ~~vine~~ climbing in
lower branches of trees;
somewhat fleshy; corolla
flesh-orange, pitcher-like,
pendent.

stem 1.5 m tall, very dull yellow
3 m. tall, or more, forming
small bushes, mostly
flowering.

vine climbing in trees,
fl. dull orange.
on a trunk 1.5 m tall, 20 cm.
thick, but largely of leaf
bases and moss.

forming dense tangles,
this thicket the only one seen
in flower.

erect, single stem, fls.
red.

Aug. 20 - *Gueboda humilis*,
main stream south of Cordillera
de los Cruceros.

dense river-bank forest.
Psychotria

L 70 *Guettarda*

Aug. 21 same loc.

L 71 *Gunnera*
steep wet low cliffs above river

L 72 *Fuchsia*
steep banks of overhanging
river-bed.

L 73 fallen tree in river-bed.

L 74 fallen tree in river-bed
Hirtella granadensis
steep wet banks of river

L 75 *Cleome* (?)
steep bank of river

L 76 fallen tree in river-bed
dense river-bank forest, in
deep shade

L 77 fallen tree in river-bank forest

L 78 dense river-bank forest

L 79 dense river-bank forest

the slopes above this stream
are in places wooded with
almost pure stands of *Alnus* sp.
(alias), noticeable because of white
trunks and very sparse foliage.
sparsely branched shrub, m.
tall, fls. and fruits white.
spreading tree, fruits
immature.

low erect stem 3 m. tall,
leaves ^{petiolate} ~~concar~~ above, spike
erect, - much mingling
around bases at tip of
stem, some leaves twice
(photo) as large as one collected.
vine-like shrub, hanging
over other vegetation.

many clumps, all flowering,
fls. white, waxy.
hair

prostrate, fruits red.
shrub 1.5 m. tall, fls.
orange.
ripe fruit red, fleshy.

shrub 2 m. tall,
vine-like, fls. white.

68 1943 - Colombia

20380 *Liabum*
abundant on overhanging river-bank
81 *Sanicula*
dense river-bank forest,
shady flat.
82 *Psychotria*
shady flat, dense river-bank forest
83 *Vaccinium*
overhanging river-banks, or low off.
84 *Pilea*
on fallen tree in dense river-
bank forest.

Aug. 22 - Rio ~~Manzanares~~^(del Nevado), east
end of Cordillera de los Andes,
not far above confluence with Rio ~~Manzanares~~
rain forest on steep slope

85 *Cinchona officinalis* L.
edge of small opening caused
by landslide.

86 *Vitaria*
base of tree trunk

87 *Cinchona officinalis* L.

88 green

89 *Cinchona officinalis* L.

90 *Cinchona officinalis* L.

(W = 1.6
L = 2)

91 *Cinchona pubescens* Vahl.

Cundinamarca Region

subtropical

pendent herbs, esp.
millay, fls. yellow.

69

fruit white, inflorescence
blackish.
pendent bracts red,
waxy, fl. white.
creeping tangled mass

Metas

anal. Bellis:
8.7 C 2.4
(8.50) 1.9
C 0.2
fls. 2
TCA 6.2

Tree 3 dm. thick, 15 m. tall
(specimen from sprout), stipules
red and midribs reddish.
(bark sample).
somewhat flattened.

anal. Bellis:
8.7 C 1.6
(8.50) 3.4
C 0.7
fls. 2
TCA 5.3

sapling 3 m. tall, green
single stem 1 m. tall.
sapling 2 m. tall, green.
tree 3 dm. thick, 15 m. tall,
(specimen from sprout) green.
(bark sample)

anal. Bellis:
8.7 C 2.1
C 1.1
fls. 2
TCA 3.2

tree, divided at base, two trunks
each 4 dm. thick, 20 m. tall
(specimen from large sprout)
stipules received
(bark sample)

20892 *Cinchona officinalis* Aug. 14
ca. 23

L 93 *Palicourea*
L 94 *Psychotria*
Aug 23 - same loc.

L 95 *Lycopodium*
abundant on an old landslide

L 96 Orchid
abundant on an old landslide

Aug. 24 - same loc.

L 97 *Lymbolanthus*
top of long ridge in bushy granite
ridge-top forest

L 98 steep slope above river canyon
small ledge

L 99 *Viola*
~~steep cliff~~ cliff left above
landslide, open soft rock.

Aug. 27 - Rio ^{of} ^{Nevado} Hernández, east end
of Cordillera Los Cruces, south of
Rio Arroyo, across from prominent
peak in Cordillera Los Laureles.

20900a *Burmeistera* Meta
20900 *Lycopodium*

L 01 cliff left above landslide.
steep slope, densely wooded,
occasional in this drainage
in similar situations

Anal. Ratio
946 3.9
(9504) 22
6 0.4
91 1.15
TGA 4.3

tree 10 m. tall, 2 dm. thick,
green, fls. purple (bark sample)
(bark sample)

shrub 1.5 m. tall, fruit yellow.

shrub, m. tall, fls. white,
fruit blue.
spikes pendent.
fls. pinkish white.

shrub 2.5 m. tall, flower
greenish yellow.

vine-like, without stinging
hairs, forming a tangle,
flowers white.
creeping, fls. light
violet

700 ft. erect

shrub 2 m. tall, fls. orange
pale distally.

Aug. 27 - East end of paramo on
Cordillera de las Cruces, south
of Río Anzóz, Meta

brushy sub-paramo slope

20902

Arragoa

03 Hedyotis
common

Aug. 28 - Quebrada el Caño,
~~pedregal~~ main affluent of Río Anzóz
on south side,

Meta

paramo slope
Geranium
common

20905

Oenothera
common in burnt over
wet ~~marshy~~ place

Aug. 29 - Quebrada de los Tambores,
~~pedregal~~ affluent of Río Anzóz
on south side.

Meta

20906

Oenothera
patch of woods on steep slope
surrounded by paramo

20907

Calceolaria
~~pedregal~~ marshy place in bottom
of valley

shrub 2 m. tall, fls. white, odorless.
~~shrub~~ bright green shrub
2 m. tall, leaves with yellow
stripe beneath, buds
pinkish, fls. white.

cespitos but small tufts,
branches weakly ascending.
fls. rose pink, paler distally.
in other places much
larger

spikes erect, fls. bronze-
yellow, striped with brown.
fls. yellow.

Aug. 28 - Quebrada Pedregal,

third ~~to~~ main affluent of Río ^{the} Río
on south side,

20908

Mimulus

wet place trampled by cows

Meta

Aug. 29 - Río Arroyo well above
confluence of Quebrada Pedregal,

Meta

bank of stream, edge of cultivated
patch09 *Mimulus*muddy places, abundant at
this spot.10 *Epilobium*

muddy edge of cultivated ground.

Epilobium

muddy edge of cultivated ground

11 *Ipomoea*

muddy edge of cultivated ground

12 *Ipomoea*

muddy edge of cultivated ground

13 *Valer*14 *Centropogon ferrugineus*
det. MeV.

15

edge of brush

16 *Fuchsia*spreading over mud,
calyx purplish red, corolla
bright yellow.stems succulent, erect,
calyx green to reddish,
corolla bright yellow
erect, fls. white, buds nodding.more or less diffuse, fls. ^{magenta} ~~pink~~,
buds nodding.shrub 3 m. tall, heads greenish
rays white, leaves gray beneath.vine climbing in bushes,
fls. whitevine-like shrub, climbing
in bushes, corolla ^{dark} orange,
paler distally, column white,
anthers black, stigma white
fls. yellow.erect shrub 1 m. tall, single stem
growing up through brush,
fls. pendent, deep magenta

20917 *Hebe* subsp. *lutea*
 L 18 *Co Manettia*
 Climbing in bushes
 L 19 *Polypodium*
 rocks in bushes
 L 20 *Galium*
 edge of brush
 L 21 *Galium hypocraspium*
 edge of brush

Aug. 30 - same loc.

22 *Galium*
 pasture with scattered subparasitic
 brush

1 Aug. 31 - Confluence of Rio Avey
 with Rio del Nevado, Meta
 wooded and brushy in bluff.

23 in dense wet woods, probably
 a parasite but not certainly

24 *Vaccinium*
 dense shade.

25 *Phoradendron*
 bushy place, parasitic

26 wet bushy woods

27 *Vaccinium*
 bush, abundant

stiff tree-like shrub 3 m tall,
 fruit immature.
 twining vine, fls. pinkish
 fruit immature.
 somewhat pale beneath,
 rhizome very glaucous
 fls. whitish, stems ascending
 tending to form vine climbing
 in bushes. fruits orange,
 fleshy.

prostrate to ascending a climbing
 in clump of brush.

magenta purple, tessellate
 with peltate projections,
 surface of mass under
 these red-pubescent,
 scrambling shrub, fls.
 fleshy, pinkish
 red-purple, tute

fls. greenish-white, waxy
 bushy shrub, fruits
 yellow-green.

78

1943 - Colombia

20923

brushy place

+ 29 *Vaccinium*

brushy place, abundant

+ 30 *Vaccinium*brushy place common but
not in flower except this

+ 31

brushy place, common

+ 32

Ladenbergia

brushy place, occasional

+ 33

brushy place, common

+ 34

Clusi

rocky bank of river

Sept. 1 - same loc. but below
Rio Arroyo, wet side of Rio Hamadea
Meta

wooded river bluff

talus cone below cliff, wet with
streamlets of water, common.

+ 36

*Miconia*sides of talus cone below
cliff, abundant.

+ 37

Pernettya

wet talus cone below cliff

Siempre viva

79

leaves fleshy, yellow-green,
fls. greenish

brushy shrub, fls.

pinkish-white.

weak shrub, fls. red,
waxy.sparsely branched
shrub 1.5 m. tall, fruit
green.shrub 4 m. tall, branches
erect, others seen up to
6 or 8 m tall. leaves very
revolute.sparsely branched shrub
1.5 m. tall, fls. greenish-red;
specimens from 2 plants.
small tree 5 m. talllow spreading shrubs
1-1.5 m. tall, fls. white,
fruit black when ripe.fruit purplish, probably
not mature, shrub 1.5 m. tall.shrub 0.5 m. tall, fls. white,
ripe fruit black. Prob. same
as "20935" but only one tall plant seen.

20938 *Nertera* sp.
abundant ^{wet} over rocks below waterfall

1, 39 *Rynchospora*
as wet talus cone below cliff

1, 40 *Vaccinium*
epiphytic in tree, wet forest

1, 41 *Saurauja*
wet thickets or rocks above river

1, 42 *Vaccinium*
epiphytic in tree, wet forest

1, 43 *Psychotria*
epiphytic on tree-trunk

1, 44 *Vaccinium*
wet forest

1, 45 *Psychotria*
wet forest, occasional

1, 46 *Psychotria*
wet forest, only one seen, terminal

1, 47 *Psychotria*
wet forest, on fallen tree, only one seen in flower.

1, 48 *Palicourea*
wet forest, occasional

1, 49 *Nertera granadensis*
wet forest, on ground, common

1, 50 *Psychotria*
wet forest, on fallen tree trunks

prostrate, creeping, forming a loose mat, leaves stiff, appearing distichous, fls. yellowish, fruit red, fleshy. Seems to be distinct from *N. granadensis*

wine-like shrub, infl. and flowers waxily, coral red slender, sparsely branched shrub 2.5 m. tall, inflorescence pendent, fruit immature wine-like shrub, inflorescence and buds coral red, buds yellowish distally.

tree 6 m. tall, fls. brilliant deep purple, stamens yellow vine climbing in lower branches of trees, flowers pendent, orange fls. light bronzed green flower bronzed green.

shrub 4 m. tall, fruit immature, infl. pendent.

prostrate, creeping, forming loose wet mats, fruit fleshy, red. fls. bronze-purple.

20951 *Palicourea*

open bushy slope

52 talus cone at foot of cliff,

L 53 *Centropogon ferrugineus*
wet talus cone at foot of cliff

54

open wet talus cone at foot
of cliff, common

55

edge of opening on wet talus
cone at foot of cliff, tall bushSept. 4 - ~~the~~ Confluence of Rio
Arroy with Rio Nevado to form
Río Humadea,

Ba. Wooded on bushy river bluff.

Meta

56 *Alnus*common ~~along~~ river banks

57

common near river banks,
and in most wet places.

Sept. 7 - same loc.

38 *Calceolaria mexicana* ^{subsp.} ~~mexicana~~ Benth.
wet rocks by edge of river

humapaz region 83

shrub 2 m. tall, fruits
immature.weak shrub up to 1 m. tall,
spreading, leaves grayish,
rays white, disk yellowish,
scrambling shrub,
corolla orange, column white,
anthers black,
erect.

vine, fls. bright red.

"aliso"
tree 20 m. tall, 6 dm. thick,
very sparsely leafy,
conspicuous for this reason
forming dense thickets,
leaves more or less erect,
up to 3 m. long when
steeply resembling some
Cistaceae; infl. 3 m. tall,
but some seen twice as tall.

"servitana"

det. Molau, 1912 corolla yellow

20959 *Nertera* rocks wet by splashing water from river

L 60 *Vittaria* on tree ^{trunk} near river

L 61 *Vaccinium* in brush

L 62 on tree-trunk more or less in open

L 63 on tree-trunk more or less in open

L 64 ^{abundant} on tree trunk more or less in open

L 65 *Phoradendron* common on ericaceous shrubs

L 66 *Vaccinium* bushy slope

L 67 *Schefflera* bushy slope, occasional

L 68 bushy slope, edge of forest

left. 2 - Paramo above confluence of Rio del Nevado and Rio Aroa. ^{Mela}
sub-paramo brush, open because of grazing

L 69 *Vaccinium*

L 70 *Oleochrysum*

prostrate, mat-forming, leaves stiff.

scrambling shrub, bracts red, corolla pinkish white, crisped

pendent

forming dense mat

terete, yellowish green, berries white.

scrambling shrub, fls. reddish

tree-like shrub, 4 m. tall.

woody, vine-like, stiff, fls. yellow.

shrub, forming tangled thicket fls. waxlike, dull coral-red, paler dots at tips.

erect trunk 1.5 m. tall, 1.5-2 dm. thick, mostly of old leaf-bases and scales, sterile fronds horizontal or drooping, fertile ascending.

(photo)

20271

72 *Gentiana*in clumps of grass & other plants
in grazed páramo.73 *Spiranthes*

grazed páramo

Sept. 5 - Quebrada Negra, 17 km.

s.w. of Cabrera, Tl.

Mun. de Pandi, Cundinamarca

wet forest, ~~in scrub~~74 *Cinchona pubescens* Vahl

in small ravines, one tree seen.

75 *Solandra*in second growth brush in
clearing.Sept. 5 - Quebrada Negra,
15 km. s.w. of Cabrera,

Cundinamarca

wet forest on level plateau

76 *Cinchona officinalis*

one tree only seen.

82-22
82-05

Anal. Bellis

9+C	0.9
ii	0.5
qui	~0.05
TCA	1.4

tree 12 m. tall, 28 cm. thick.
fls. pink, fragrant (dark sample)
~~scandent~~ scandent shrub,
fls. yellow.

77 *Nertera granadensis*very common weed in recent
clearings.

Anal. Bellis

9+C	2.7
9504	2.0
ci	0.7
qui	0.5
TCA	2.5

sterile tree, 2 dm. thick, 15 m.
tall, old leaves crimson red
(dark sample)
prostrate, mat-forming,
fruit scarlet.

Sept. 5 - Quebrada Negra, 15 km. s.w. of
Cabrera, Cundinamarca
on bank e. of Río La Vieja, CundinamarcaTrail from Cabrera to La Colonia
runs up the valley of Quebrada
Negra (confused on map with
q. de Pueblo Viejo), throughPáramo de Fumapay
& Fumapay regionshrub 88 m. tall, rays purple,
disk yellowish, turning
dark red-purple.plant dark reddish green,
fls. pale purple.

roots fleshy, fls. white.

wonderful tall wet forest. The sides of this valley are rather gently sloping, rather than steep, and the forest is much better developed than on steeper slopes. *Cinchona officinalis* occurs here, but, as indicated by sprouts in cut over places, definitely localized in "manchas" rather than generally distributed. There is no apparent season for this sort of distribution.

left. 6 - Plateau 6 km. n.n.w. of Cabrera, n. ad. w. of Rio Sumapaz, Mun de Pandi. *Cuadinares*
Cleared of wet forest and grown up with second-growth brush.

20978

L. 79 Fab.

L. 80 Enc.

L. 81 Fab.

L. 82 common

L. 83 Fuchsia

common

L. 83 Fab.

L. 84 Palicourea

common

L. 84a Palicourea

On both sides of the trail the forest is mostly cleared for a short distance, and a string of new fincas are scattered along the trail. The clearing will likely go on rapidly till all of this is destroyed. In the cleared portion is brush about 3 m. tall, interlaced with vines. *Lymbolanthus* is very common and conspicuous here, rather than scattered and rare as usual, all in flower.

Cinchona officinalis distributes locally here, as indicated by sprouts. *Lymbolanthus* also common here and in bloom.

sprawling shrub, fl. bronze-green, fruits purple.

~~Scandent~~ herb, up to 1 m. tall,

fls. brilliant crimson-red.

scandent shrub, rays white

scandent shrub, fls. deep orange.

scandent shrub, flowers

scarlet, pendent.

sub-scandent shrub,

fls. white.

shrub 3 m. tall, infl. and fl. yellow.

L 20975 *Comb.*
common.

L 21 86 *Cinchona officinalis*
occasional locally
Sept. 7. - San Bernardo, ~~the~~
valley of Rio Negro, Cundinamarca
Roadside banks and thickets

L 21 87 abundant, moist places

L 21 88 ~~Wissia~~ *see you*
thickets

L 21 89 *Abutilon*
thickets

L 21 90 *Eupatorium*

L 21 91 *Galium hypoleucum*
thicket

L 21 92 *Crescentia*
thicket

L 21 93 *Castilleja*
most places, not common

L 21 94 *Rubus*
thickets

L 21 95 *Mikania*
thickets

L 21 96 *Baccharis*
thickets

sub-scandent herb,
fls. yellow.

- sterile stumps sprout
4 m. tall.

mesophytic region, thickly
populated and planted to coffee.
(photos).

prostrate with ascending
branches, flowers yellow.

shrub 2 m. tall, stems
and infl. with purplish
pubescence, fls. white,
fruit green.

vine climbing in thicket,
buds whitish.

erect herb 1.5 m. tall, fls. lavender.

vine climbing in bush,
fruits orange, fleshy, fls.
greenish yellow.

vine climbing in thicket,
fls. yellow, fruit green.

erect, calyx green, bracts
tipped with scarlet, pubescence
glistening, whitish.

wine-like, forming
tangles ~~savanna~~ 2 m. high,
fls. pale pinkish, fruit
black when ripe, insipid,
not at all sweet.

vine climbing in bush.

- fls. white.

woody vine, leaves appearing
distichous, flowers white.

20997 *Melast.*1 98 *Solanum*1 99 *Phytolacca*21000 *Polygonum punctatum* Ell. ^{det. n. 67.}1 01 *Solanum*1 02 *P.* common1 03 *P.* prophy1 04 *Iacina*1 05 *Drymiana cordata*1 06 *Plantago*1 07 *Galinsoga*1 08 *Verbena luteola*1 09 *Bidens*1 10 *Borragis*

1 11

1 12 *Lysimachium*
dry bankserect herb, 1 m. tall, fls. white,
infl. purplish-brown.herb 1 m. tall, buds with
purplish pubescence, fls.
white, fruit immature
(yellow and delicious when
ripe - the "~~Stink~~" "Lulo")coarse herb, stems
purplish, fls. magenta-pink
- fruits immature.weakly ~~as~~ erect or
ascending, fls. white.
erect suffrutescent herb,
2 m. tall, fls. white.suffrutescent herb, up
to 1 m. tall, fls. deep yellow.
prostrate, hanging over
banks, petals white, entire,
styles white 3 (n 4)erect, fls. whitish.
prostrate, hanging over
roadside banks, herbage
dull green, inflorescence
ascending, fruiting
pedicels very sticky.
infl. erect.erect rays white, disk yellow.
corolla lavender with
red tube. plant erect.

rays white, disk yellow.

fls. white

sprawling herb, fls. pale lavender.
fls. purple, roots yellowish

94

1943-Colombia

21013 *astrephaeochrophyllodes* (J. E. Smith) DC.
det. S. SmithL 14 *Pteridium aquilinum*
roadsidesJuly
Aug. 9 - Rio Cauca, 4 km. s. w. of
Tunja, Cundinamarca
coffee plantation.L 15 *Inga*July
Aug. 9 - Valley of ~~the~~ Guadalupe
Malagana, road from
Bogota to Tunja, 14 km.
s.e. of Tunja, Cund.L 16 *Nertera granadensis*
moist road cut, commonL 17 *Vaccinium*

moist road cut

L 18 *moist road cut*
~~gooseberry~~July
Aug. 9 - Valley of Guadalupe
Malagana, road from
Bogota to Tunja, 15 km. n.e. of Tunja, Cund.L 19 ~~Gunnera~~ *Gunnera*
wet slope by roadL 20 *Burrettya*

stream bank

L 21 *Tropaeolum*
slope above stream

95

sprawling herb, fls. white
or pinkish white.
rhizome deeply buriedtree 5 m tall, stamens white,
used as shade tree.prostrate, fruits fleshy,
red.

prostrate, fruit light purple.

prostrate, hanging.

stem short, upturned.

fruit fleshy, purplish on
one side, whitish on other.
extensively creeping and
climbing vine, stem coral-red,
petals & sepals buff-yellow.

✓ 22 *Alchemilla*
roadsides near stream

✓ 23 *Uncinaria phleoides*
roadsides near stream

✓ Sept. 14 - pass between Alban and Facatativa, 2 km above Alban,
Cundinamarca 2650 m
brushy slope, cut-over hillside

✓ 24 *Cinchona pubescens*

1 = 1.15	2 = 1.15	3 = 1.20	4 = 1.20
5 = 1.22	6 = 1.23	7 = 1.23	8 = 1.23
9 = 1.24	10 = 1.25	11 = 1.25	12 = 1.25
13 = 1.26	14 = 1.27	15 = 1.27	16 = 1.27
17 = 1.28	18 = 1.29	19 = 1.29	20 = 1.29
21 = 1.30	22 = 1.31	23 = 1.31	24 = 1.31
25 = 1.32	26 = 1.33	27 = 1.33	28 = 1.33
29 = 1.34	30 = 1.35	31 = 1.35	32 = 1.35

✓ 25 *Quercus humboldtii*
steep slope, patch of oak wood

✓ 26 *Psychotria*
parasitic on *Cinchona pubescens*

✓ Sept. 14 - just above 1 dm ferns
half way between Alban and Facatativa
Cundinamarca.

✓ 27 *Passiflora*
second growth woods.

✓ 28 *Palicourea*
edge of road clearing

✓ 29 *Psychotria*
common

✓ 30 *Psychotria*

✓ 31 *Palicourea*

prostrate
large dense shrub

small tree 7 m. tall 1 dm
thick, flowers mostly
dried, fruits immature
and others shattered. (bark sample)
fruiting tree 15 m. tall, 1 dm. thick
(a) flowering tree 10 m. tall, 2.5 dm. thick
immature fruit orange,
mature fruit black

tall cane, 4 m. tall, growing
up through bushes
fruit green infl. purple,
well shrub.

erect herb, fls. white

erect subshrub 0.8 m. tall,
fruit light purple.

shrub 1 m. tall fls. greenish
white.

98

1943 - Colombia

✓ Sept. 19 - Falls of Teguendama,
Cundinamarca

slope just above falls

L 21032 *Prosopis*

✓ Sept. 20 - ridge bet. Rio Piedras
and Rio Guicaré 5 km. n.e. of
Dolores, Cauca.

thicket along fence at side of
road, cultivated land.

L 2 33

L 34 *Croton*
very common throughout region

✓ Sept. 26, ^{47 km. n.e. Popayán}
+ w. side of valley of Rio
Guachicono, 8 km. n.e. of El
Bordo, Cauca

on weedy road embankment.

L 35 *Acanthocarpus*

L 36 *Borreria*

L 37 *Combretum*

L 38 *Combretum*
abundant

L 39 *Lantana*?

L 40 *Waltheria*
common

L 41 *Croton*

Cundinamarca, Cauca

99

tree 5 m. tall, fls. white
(same tree as # 21868)

shrubby tree 3 m. tall,
small trees 4-5 m. tall, others
much larger, old leaves
turning bright red.

prostrate, bracts green, fleshy
erect, fls. white.
heads whitish, plant 1 m. tall
erect, weak shrub 1.5 m.
tall, heads yellow
erect, lower leaves dead
and fallen, heads purple
erect, up to 1 m. tall.
erect, head whitish

100

1943 - Colombia

42 ✓ Sept. 27 - Morasurco Ridge, 10 km.
n.e. of Pasto (km. 15 on road to
Popayán), Nariño
L 42 *Gunnera*
wet slope at base of cliff, common
L 43 *Daucus*
wet roadside
L 44 *Cupatorium*
thicket above road
L 45 *Drymaria cordata*
roadside thicket
L 46 *Epilobium*
wet banks
L 47 *Verbena*
wet banks & cliffs
L 48 *Myrsinaceae*
wet roadside
L 49 *Veronica*
roadside
L 50 *Malvastrum* "Gibele"
wet slope, mud, abundant
L 51 *Centropogon*
thicket above road
L 52 *Solanum*
disturbed ground along road
L 53 *Gilia hypoleucum*
thicket above road
L 54 *Centropogon lencophylloides* Glech.
thicket above road det. M.V.
L 55 *Castilleja*
roadside thicket
L 56 *Calceolaria mexicana* Benth.
wet base of cliff subsp. *mexicana*
L 57 *Geococcyx*
crevices in cliff.

Nariño

101

very short, prostrate
with erect
sprawling herb, fls.
white
fls. white
fls. purple
fls. white with purple
dots on lips
prostrate, fls. white
fruits mostly shattered
fl. orange, column white
anthers black. scandent shrub.
fls. deep purple
vine-like herb, fruits orange,
fleshy
scandent shrub, flowers
bright red. anthers deep purple
bracts & calyxes tipped with
scarlet
prostrate, fls. yellow
pendent, fls. bright red

det. Molan
1982

✓ 63 Sept. 23 - Cliffs n. of
Rio Bobo, 10 km. e. of Irua,
25 km. n. of Past. Marín
21059 *Hedysotis thymifolia*
road cut, crevices

✓ 64 Sept. 30 - Bridge across Rio
Bobo, Guatirá, at confluence of Rio Bobo,
1 km. e. of Irua, 29 km. s.w. of Past. Marín
dry cliffs above road.

✓ 65 *Tillandsia*
very abundant in rock crevices,
also seen on bushes and trees.

✓ 66 *Selaginella*

✓ 67 *Cheilanthes*

✓ 68 Oct. 1 - Rio Guabo, 3 km. below
Piedrancha, Marín 1700 m.

✓ 69 *Baronia*
fence - now in dry valley bottom

✓ 70 Oct. 1 - Rio Guabo, 8 km. below
Piedrancha, at Circalle area
just above San Miguel, Marín
Wooded bottom of ravine 1550 m.
at foot of hills.

✓ 71 64 *Croton*

✓ 72 65

undergrowth

fls. white, corolla lobes patent

tufts.

forming thin mat, adhering
to rocks, spreading as
much as 1.5 m.
curled up when dry.

small tree 4 m. tall,
fls. white.

Cinchona pubescens ~~at~~ common
here at foot of hills - good
sized trees, but mostly harvested.
stump and root sprouts common, especially
in cut-over areas.

✓ 73 shrub 4 m. tall, others form
trees up to 10 m. tall, old
leaves red.

✓ 74 shrub 1 m. tall, fl. white.

71066 along trail, partially shaded.

L 67 *Solanum* in undergrowth, partially shaded.

L 68 *Palicourea* undergrowth

L 69 *Tournefortia* undergrowth

L 70 all fls. undergrowth

L 71 undergrowth

L 72 undergrowth

L 73 *Myrsine* undergrowth

L 74 *Boehmeria* undergrowth along stream

L 75 *Hedyosmum*

L 76 *Bomarea* rocks along stream

L 77 *Ladenbergia* slope

L 78 *Guatulca*

L 79 *Bocconia*

fls. orange red, orifice of corolla small.

shrub 2 m. tall, fls. white, fruit immature.

shrub 1.5 m. tall, fls. yellow, infl. coral red, in fruit turning yellow, fruits immature.

small tree, fls. white, leaves conspicuously reticulate - rugose

slender shrub 2 m. tall

shrub 2 m. tall, ripe

fruits purple, shiny, fleshy.

shrub or small tree 5 m.

tall, inflorescence pendent.

shrub 2 m. tall, fruit immature.

shrub 2 m. tall,

infl. pendent.

tree 6 m. tall, aromatic when broken, fruit white, fleshy

fls. white.

"guava roja"

tree 10 m. tall veins reddish beneath, buds white (early sap)

shrub 2 m. tall, bud enclosed in hard gum.

"barniz de Pasto" used to make a lacquer for wood.

erect shrub 3 m. tall, fruiting inflorescence pendent, sap orange, used to color clothes.

21080

- 86

parasitic on *Cinchona pubescens*581 *Rondellia*

undergrowth

87

84 *Relax*85 *Growth*

parasitic on # 21084.

86 *Capricorn*

undergrowth

87 *Cinchona pubescens* Vahl

Anal. Bellis
94% water
Cin 1.4
Fl. A. 1.4

88 *Ladenbergia*

Anal. Bellis
94% 0.4
Cin 1.9
Guia water
Fl. A. 2.3

89 *Cinchona pubescens* Vahl90 *Vismia*
edge of forest

"mata Palo", said to destroy coffee trees. dark green. small tree, 5 m. tall. slender shrub 4 m. tall, fruit black, fleshy. small tree, 5 m. tall, fls. white. small tree, fls. whitish. fruit white, translucent, spherical. "mata Palo" light green. shrub 2 m. tall, fruit immature. fls. whitish. wounded leaves used to cure fever and worms in children. partially dead tree, ^{leaves} ~~atapu~~, stipules green, turning red, carinate, fruit immature, "guina amarilla". slender tree 6 m. tall, veins reddish beneath. "guina roja".

tree 10 m. tall, leaves dull above, old ones red, fruits immature (bark sample).

small tree, leaves ~~reddish~~ coppery beneath. This tree is said to grow from the dead body of a worm. The worm shown me was a scarab larva which had ~~fungi~~ a club-shaped fungus growing from it. In alternate years the beetle is supposed to emerge, the other years the tree.

108 1943 - Colombia

21091 *Coccocypselum*
cut above trail at edge of forest

✓ 91 Oct. 1 - Piedrancha, Rio
Guabo, Nariño 1850 m.
92 *Nicandra physalodes*
weedy vacant lot
93 *Buddleia*
weedy vacant lot.
94 *Tecoma stans*
garden, cultivated

✓ 95 Oct. 2 - Curacel area, just above
San Miguel, ~~stem~~ ~~bits~~ Rio Guabo
8 km. below Piedrancha, Nariño.
1850 m.

95 *Tephrosia toxicaria*
in cultivated ground
96 *Ixora*
in underbrush along ~~old~~ stream
97 *Begonia* ~~gigantea~~
in underbrush along stream,
common in region up to 2000 m.

✓ 98 Oct. 2 - mountains 5 km n.w.
of Piedrancha, Nariño. 1850-2150 m.
rain forest on steep north slope

109

prostrate, fls. lavender,
fruit soft, ~~pea~~ pyriform,
blue.

herb 1.5 m. tall, fruit
yellow, said to cause
insanity if eaten.
- suffrutescent herb,
fls. whitish.
- small tree 9 m. tall,
fls. bright chrome yellow,
fls. used for excessive
menstrual bleeding.

used as fish poison.
herb 1 m. tall.
shrub 2 m. tall, inflorescence
cauline, coral red, fls. orange-
red with yellow lobes.
erect herb 5 m. tall, stem
very thick, fls. white.

A very hairy form of *Cinchona pubescens*
common in this area, mostly
small sprouts below, larger
trees common at 2000 m. in
west sloping ridge.
smooth form rarely reaching 1200 m.

21098 *Schizopodalyx binotatus* 1900 m.
" 99 *Cephaelis axillaris* 2150 m.
in undergrowth, common.

21100 *Mys.*
in undergrowth, rare 2150 m.
01 *Cinchona pubescens* Vahl.
common 2150 m.
Anal. Bellis
qec.m.m.tn 03
C 1.1
Qui 0.1
T.C.A 1.2

02 *Mys.*
in undergrowth 2200 m.
03 *Cinchona pubescens* 2150 m.
Anal. Bellis 03
qec.m.m.tn
C 1.1
Qui 0.1
T.C.A 1.2

04 *Mys.*
undergrowth 2150 m.
05 climbing in *Cinchona pubescens*,
Cinchona pubescens Vahl. 2150 m.
Anal. Bellis 06
qec 1.3
C 0.7
Qui m.m.tn
T.C.A 2.0

07 *Cinchona pubescens* Vahl 1750 m.
young shoots common, large trees not
seen at this altitude

08 *Cyclanthus*
occasional 1700 m.

small tree, 8 m. tall, many
seen but all sterile.

supporterent herb to 1 m. tall,
fruits blue, flowers white,
stems green.

small weak shrub, flowers
green.

tree 70 cm. thick, 12 m. tall,
old leaves red, fruits reddish.
(bark sample) "guina lamuda".

shrub 1.5 m. tall, infl
purplish-red, berries
lavender. Veins reddish beneath,
tree 10 m. tall, 15 cm. thick,
fruits reddish, old leaves
red. "guina lamuda" (bark sample)

slender shrub 3 m. tall,
fruits immature

~~herbaceous vine.~~

tree 10 m. tall, branched at base,
trunk cut 15 cm. in diam.
"guina lamuda" (bark sample)

young shoots ~~1.5 m. tall~~ 1-1.5 m. tall,
"guina lamuda"

rhizome short, thick, apex erect,
leaves bifid to base, about
3 mature leaves on plant.

✓ Oct. 3 - Quebrada Panacual,
8 km. S. of Piedrancha,
Río Guabos drainage, Nariño.
sparsely wooded, bushy 2800 m.
ravine.

✓ 21107 *Phytolacca*

✓ 3 10 *Fresine*

✓ 4 11 *Liparima*

✓ 12 *Cinchona pitayensis*
small mancha of five
or six young, sterile trees,
no seedlings.

✓ 13

✓ 14 19 *Galium hypocraspium*

✓ 15

✓ 16 on fallen big tree *Palicourea*

✓ 17

Oct. 3 ridge w. of Río Guabos
dry upland, S. bank, 2800 m.
Quebrada Río Guabos, Nariño
dry, burned over steep slope. 2800 m.
common in dry part of ravine

Anal. Bellis
Pct 1.4
cm 2.5
mm 1.0
T.C.M 4.1

low spreading coarse
herb, fls. magenta-pink,
berries black when ripe.
herbaceous vine scrambling
over bushes.

shrub 4 m. tall, with
lemon-grass odor, leaves
very rugose, fls. greenish-
yellow, fruits spherical,
covered with soft projections,
rose-colored.

tree 8 m. tall, 1 dm. thick,
only branched near top,
leaves green, somewhat
lustrous above (bark sample)
erect suffrutescent herb,
fls. yellow.

vine-like, fruit fleshy, orange.
fls. rose-pink

erect shrub 4 m. tall,
infl. deep blue, fruit green.

tree 5 m. tall

114

1943 - Colombia

2/11/8

Vaccinium

dry part of ravine

L 5 19

~~valleys~~

dry part of ravine

2/11/8

Oct. 3 - ridge w. of Quebrada
de Pueblos Viejos, 2 km. s. of
Pedrancha, Pis Guabos,
Marin 2800 m.

L 5 20

*Alnus*abundant from here down
to river, dry burned-over slopes.
most plants appear dead
from fire.

L 5 21

vertical rock outcrops

L 5 22

*gunnera*colony around spring
in base of very tall *Chusquea*

2700 m

L 5 23

Solanum tuberosum

cultivated (with #21124)

L 5 24

Solanum tuberosum

cultivated (with #21123)

2300 m.

2300 m.

115

low spreading bush,
fruit translucent, white.
tree 6 m tall, fruit
black when ripe.shrub 1.5 m. tall
"alias"densely caespitose,
have been burned so
all shoots are new,
fls. flame-red.
rhizome short, almost erect,
some gelatin at apex,
apex of rhizome when cut
shows what appear to
be symmetrically arranged
colonies of blue-green algae
within the tissue;
leaves ascending,
somewhat funnel-
shape, infl. purplish.
3-4 mature leaves on plant
fls. purple "papa"

fls. white "papa"

21125 *Hedyotis thysanocarpa*
dry slope, along trail in disturbed place

21126 *Hedyotis thysanocarpa*
dry slope, sparse brush

21127 *Hedyotis thysanocarpa*
dry slope, cut above trail

✓ Oct. 3 - Rio Guabo, mouth of Quebrada de Pueblo Viejo,
4 km. s.e. of Piedrancha, Nariño

21128 *Alnus*
thickets at foot of steep slope, abundant

21129 *Alnus*
dry river-bottom or "vega"

21130 *Alnus*
dry bank of river, abundant

21131 *Alnus*
dry river-bottom or "vega"

21132 *Psidium guineense*
dry pasture

21133 *Hedyotis*
dry lower slope, common in sun-burned places

21134 *Eugenia*
common on bushy lower slope

21135 *Calycanthus*
on tree-trunks on river-bank

2350 m. small shrub, fls. white.

2250 m. low spreading, ~~but~~ rigid spiny bush, fls. white, fruit immature

2250 m. small shrub, fls. white.

1975 m. shrub 5 m. tall, "aliso"

1950 m. small tree 4 m. tall, fruit black.

1940 m. shrub 2 m. tall "aliso"

1950 m. shrub 5 m. tall ^{branches} ~~branches~~ ending in tufts of ~~leaves~~ ^{leaves} like ~~leaves~~ flowers, fls. pendent, white.

2050 m. low bush 1 m. tall, fls. white.

2050 m. small bush, fls. white.

2050 m. small tree-like tree, 2-3 m. tall, fls. white, leaves dark green.

1940 m. caespitose, sepals orange, petals white

11 Oct. 4 - n.e. ridge Volcan Guatocala, about 3 km. n.e. of summit, 18 km. s. of e. of Piedrancha, Nariño sharp boundary bet. 3600 m. paramo and subparamo

21 137 *Hedyotis* abundant at upper edge of subparamo.

36 vertical mossy cliff

11 Oct. 4 - head of Rio de El Cristo, 4 km. n.e. of summit of Volcan Guatocala, 18 km. n.e. of Piedrancha, Nariño, scrubby forest 3000 m.

38 *Palicourea*

11 Oct. 4 - Upper Rio Guatocala 5 km. n. of summit of Volcan Guatocala, 17 km. e. of Piedrancha Nariño, scrubby forest overgrown with *Chusquea* 2700 m.

39 *Nectera granadensis* in trail

11 Oct. 4 - Upper Rio Guatocala, 5 km. n. of summit of Guatocala, 17 km. e. of Piedrancha, Nariño 2600 m.

40 *Gallium hypoleucum* pasture, mostly bank

shrub up to 0.5 m. tall, fls. pinkish purple outside, whitish within fls. greenish-yellow.

shrub 2 m. tall, infl. yellow, fls. white, waxy, fruit dark blue, mostly shed

prostrate, fruit orange

fruit orange, fleshy

21141

Nertera granadensis
vertical mossy bank in clearing

Oct. 5 - Upper Rio Hualcalá, 5 km.
n. of summit of Volcán Gualecalá,
17 km. e. of Piedrancha, Nariño
steep slopes above stream 2575 m.
densely overgrown with Chusquea
Gunnera
along trail

42

prostrate, fruits range to
red.

rhizome ascending 4 dm. long
3-4 leaves on plant, leaves
rugose above, ~~infl.~~ almost horizontal.
This plant is about
average size. Others twice
as large and very much
smaller. Fairly uniform
here in leaf outline, becoming
more deeply lobed
more scabrous above
but perhaps all one
species, up to # 21164
in the upper edge of
sub-paramo 1000 m. above,
uniformly more slender
than others. I have
seen of same affinity.
Petioles and inflorescence
slender. Bud smaller
with few bracts. All
plants in fruit this
one with fruit green, others
red.

✓ 40 Oct. 5 - Headwaters of Quebrada (Río) de El Criollo,
4 km. n.e. of summit of Volcán Guadalupe, 18 km.
n. of e. of Pedrancha, Nariño
sparse wet forest with much underbrush.

✓ 41 1943 Melast.
common in undergrowth

L 44 Ebel.
in second growth brush.

✓ 45 in second growth brush

L 46 Passiflora
in second growth brush

✓ 47 ~~and~~
vertical banks above trail

✓ 48 Cinchona pitayensis

✓ 49 Palicourea

✓ 50 Cinchona pitayensis

✓ 51 ~~and~~
in humus, barely emerging

Cinchona pitayensis is fairly common and distributed in the forest between about 2900-3000 m. the larger trees up to 25 cm. thick being practically all harvested. Hundreds of saplings or sprouts up to 5 cm. thick remain. All slopes low shrub up to 1 m. tall, calyx and infl. red corolla yellow.

✓ 2800 m. elongate shrub, fruit vertically compressed or flattened.

✓ 2900 m. vine fls. yellowish white, leaves somewhat thick.

✓ 2900 m. vine, leaves slightly glaucous beneath, fls. pendent, calyx and corolla light magenta corona of white warts on a purple ring. "causa"

✓ 2900 m. stiff caespitose herb 1 m. tall, fls. deep orange.

✓ 2900 m. young plant, possibly a root-sprout, 4 m. tall, sterile.

✓ 2900 m. shrub 2 m. tall, infl. blue-black, fls. blue, fruit blue-black.

✓ 2900 m. very young plant, less than 1 m. tall, leaves very large peltate appendages forming a tessellated surface, these red-pink, head spherical.

✓ 2850 m.

✓ 52 *Cinchona pitayensis*
small group of trees
Jean
bottom of ravine

✓ 53 *Cinchona pitayensis* Wedd.
sloping side of ravine, common.

✓ 54 *Cinchona pitayensis* Wedd.
sloping side of ravine, common.

✓ 55 *Brunellia*
top of ridge

✓ 56 *Cinchona pitayensis* Wedd.

✓ 57 *Cinchona pitayensis* Wedd.
brushy clearing

✓ Oct. 5 - N.e. ridge of Volcan
Guatiquia, 2-3 km. n.e. of
summit, 13 km. s.e. of
Piedrachita, Nariño

✓ 58 *Hedyotis*
transition bet. forest and subparamo
common from here to top of
subparamo.

✓ 59 *Palicourea*
upper edge of forest

✓ 60 *Bomarea*
sub-paramo, common

2950m. small, much-branched
sterile tree, more or less
sprawling, 6 m. tall

2950m. herb 1 m. tall, calyx reddish
green, corolla with a small
orifice, yellow above, red
beneath

2950m. tree 1-2 cm. thick, 15 m. tall.
branched only at top, old leaves
red. leaves glossy above,
fls. deep purple with white
hair, fruits in all stages
of maturity, bark ^{white} turning
red-brown quickly when
cut. (bad sample)

3000m. tree 6 m. tall.

3100m. young tree 4 m. tall, sterile
stump sprouts 1 m. tall.

3100m. -

3100m. -

3100m. fls. pinkish-lavender
outside, white inside
shrub 7 dm tall

3100m. bush 1.5 m. tall, infl. blue-black
fls. dull blue.

3100m. -

3100m. sepal vermilion, petals
yellow spotted with purple,
fruit yellow, globose.

Anal Pts	18
42	29
in.	0.6
4m.	5.3
7.02	

21161

Lecocia

subparamo, also common in paramo

L 62 *Lolium*

upper edge of subparamo

L 63 *Blechnum*

common in subparamo, also in forest below.

L 64 *Gunnera*upper edge of subparamo
apparently upper extreme
of # 21142, but much
smaller, leaves much moreOct. 5 - ^{upper} e. slope of Volcan
Guatiquasteeply sloping 3500-3600 m.
paramo with grass and
Espeletia the principal components
of the vegetation.L 65 *Eriocaula*L 66 *Espeletia*
commonL 67 *Lycopodium*

hanging over cut bank above

L 68 *Acacia*
clumps along trailshrub 1 m. tall, leaves
glaucous, heads yellow,
erect in flower nodding
in fruit.shrub, m. tall, corolla
orange, column whitish,
anthers blackish.
sterile fronds prostrate,
fertile ones erect, rhizome
short, thick.— rugose and
scabrous, infl. much more
dense.forming a dense hummock,
fls. whitish, fruit purple-
browncaulescent, up to 2 m. tall,
infls. ascending, heads
yellow.prostrate, spike erect
bushy, 0.5 m. tall.

trail

✓ 71 69 *Valeriana*
common

✓ 70 *Vaccinium*
common

✓ 71 *Castilleja*
common

✓ 72 *Perinettya*
common

✓ 73 *Lidia*
scattered along disturbed
bank above trail

✓ 74 *Perinettya*
common

✓ 75 cut bank above trail, one plant
seen

✓ Oct. 5 - near Guachique, s. e.
slope of Volcan Gualecalá.
15 km east-s.e. Narino

3500 m

✓ 76 *Loasa*
thickets along trail, near
cultivated ground in subparamo.

✓ 77 *Crantzia*

✓ 78 *Baccharis*
grazed place in paramo

✓ Oct. 6 Oscunana, village on s. slope
of Volcan Gualecalá

3150 m.

✓ 79 *Crantzia*
cult. in garden said to have been
transplanted from paramo nearby.

slender shrub 0.5-1 m. long,
sprawling, fls. white
almost prostrate, berries
blue.

tips of bracts red, calyx
green, corolla yellowish
distally

low shrub, fls. white

shrub up to 0.8 m. tall
fls. gray, drying on plant

low bushes, fruit black.

small bush, fls. yellow.

✓ sprawling, stinging herb
up to 1 m. tall, fls. orange
fls. red, ripe fruit black.
heads whitish

shrub 2 m. tall, leaves pungent
fls. red-orange.

2/11/43

✓ 81 *Lathyrus* cult. in garden

✓ 82 *Bocconia* cult. in garden

✓ 83 *Calceolaria* thickets around cultivated ground

✓ 84 *Calceolaria lamiifolia* HBK. at mtn. roadside

✓ 85 *Urtica* thickets in ravine

✓ 86 *Fuchsia* common in second-growth brush throughout region.

✓ 87 *Myosotis* roadside

✓ 88 *Mutisia* thicket in ravine

✓ Oct. 6 - slopes of Volcan Guatavita above Mallama,

Nariño.

✓ 89 *Tournefortia* second growth brush 2200 m.

✓ 90 *Scrophularia* common throughout region

✓ 91 *Pilea*

fls. dull orange

fls. deep rose-purple

shrub 3 m. tall.

fls. magenta

fls. sulfur-yellow

herb 2 m. tall

shrub 2-3 m. tall, fls. pendent, vermillion, buds greenish-tipped.

fls. lavender

herbaceous vine climbing in trees and bushes, heads pendent, rays bright scarlet.

spreading bush, m. tall

fls. purplish-white.

shrub 3 m. tall, fls. magenta, m. tall

erect, infl. purplish

✓ Oct. 6 - slopes below Mallana,

21192 dry brushy, burned over slopes. 2475 m. *Hedysotis* *languida* *Marinæ*
common on dry slopes
293 *Lantana* 2450 m.
trail-side
94 *Miconia* 2300 m.
common
95 *Ambrosia* 2300 m.
96 *Hedysotis* 2150 m.
common on dry slopes up to 2475 m.
97 *Mimulus* prostrate, fls. yellow.
mud where trail crosses rivulet

✓ Oct. 9 - Mongón, 20 km. e. s.e.
of Barbacoas on Río Telembí,
Marinæ

98 slopes and cliffs just above river 50 m.
Gonzalagunia
wet cliff
99 *Pomoea* wet cliff
21200 comp. wet cliff, abundant
01 Rub. weedy slopes at base of cliff
02 lob. weedy slopes at base of cliff
21203 comp. weedy slope

fls. white, lobes patent
suffrutescent herb,
fls. pinkish-purple.
Used medicinally.
- shrub 2 m. tall,
fruits purple.
- shrub 2.5 m. tall.
fls. white, lobes patent
prostrate, fls. yellow.

shrub with long pendent fleshy
stems, spikes pendent, fruit white,
shrub 1 m. tall, fls. whitish.
shrub up to 4 m. tall, fls.
white, fruit bladdish.
twining vine, flowers
whitish, fruit red, fleshy.
herb, m. long, fls. whitish,
in a small scorpioid cyme,
odor of plant musty when
broken.
bushy herb, heads white.

✓ 1204 Cupped
rocks at base of waterfall
wet with spray

✓ 1205 Oct. 9 - same loc. 1500m.
tops of low hills above
river bluffs, dense
tall ~~one~~ rain forest
with a clay-like soil
little humus and little
underbrush.

✓ 1206 Oct. 9 Faramea

✓ 1207 Oct. 9 Faramea

✓ 1208 Oct. 9 Cephaelis
common

✓ 1209 Oct. 9 Cephaelis
common

✓ 1210 Oct. 10 - high ground, ^{and river margin} south
of Barbacoas, along Rio Guatiquia,
Marin 4000m.

✓ 1211 Oct. 10 second growth, ^{not} woods
Cephaelis
not common, growing with #1200
on higher ground.

bush 0.5 m. tall,
fls. pinkish

* slender shrub, fruit
greenish-black.
small tree 6 m. tall.
ripe fruit dark blue
said to be called "capitao"
in Choco and used for fevers.
small tree, 6 m. tall
fls. pale blue-lavender,
fruit lavender when ripe.
infl. white.
weak shrub up to 2 m.
tall, bracts bright red,
fls. ~~yellow~~, ~~yellow~~, fruits
dark blue, glossy.

soil clay-like, little
humus.

brittle suffrutescent herb
up to 2 m. tall, bracts brick
red, fls. white.

✓ 11 10 Cephaelis
high ground, common, growing
with # 11 209.

✓ 11 11 Palicourea
brush at top of gravel
beach, vega of river

✓ 11 12 orch.
crotch of tree along river

✓ 11 13 Coccocypselum
under trees on high ground.

✓ 11 14 Rub.
in brush on high ground

✓ 11 15 Diiodia
wet ground, somewhat open,
near stream

Oct. 11 - trail west of Pimbi,
between Pimbi and Rio
Telembi, 10-15 km. S. of
Barbacoas, Narino. 5000
dense bushy woods, clay-like
soil with streaks of
gravel.

✓ 11 16 ridge - P

✓ 11 17 Vaccinium

✓ 11 10 supporterent herb up to 1.5
m. tall fls. yellow, fruits
bright blue, pyriform,
fleshy, not glossey;
bracts scarlet, becoming
orange in age.

✓ 11 11 scandent shrub up to
4 m. tall, infl. coral red,
fl. lemon yellow, fr. immature.
leaves grass-like, flowers
white, marked with purple
inside.

✓ 11 12 prostrate, fls. lavender,
fruits fleshy, bright blue
woody vine

✓ 11 13 weakly ascending herb,
(others seen climbing
as much as 2 m. in bushes)
fl. white.

✓ 11 14 tree 10 m. tall, leaves
light green, buds pinkish,
dark exceedingly bitter
was hanging from tree
bracts pink.

Oct. 11 - Rio Talambo 10 km.
e. of Barbacoas, Narino
bank of river at
mouth of muddy inlet.
sometimes submerged. 41 m.
Psychotria
common on steep bank.

Oct. 11 - Pimbi, 15 km. e. of
Barbacoas, Narino
clearings in wet forest.
Palicourea ignea or physica
common along trail

7 to Monina

Oct 11 - Trail north of Pimbi,
15 km. e. of Barbacoas, Narino
dense wet forest 52-75 m.
in clay-like soil containing
some gravel.
Cinchona barbacoensis
top of small ridge, may
be small colony here.

Anal. Bellis 1
94C n.m.t.
Cir. n.m.t.
Qui n.m.t.
78

shrub, 1.5 m. tall, fls.
white, fruit white w.

herb up to 2 m.
inflored, fls. w. pinkish,
fruit in ovaries.
supporting stem 1.5 m.
tall, shades red-purple,
fl. violet, fruit black
when ripe

wine-like fruit a or may
shrub. apparently from
a common underground
stem which has many
underground branches
up to 1 m. in long spreading
and tangled with other
small trees, base not
more than 4-5 cm. thick,
bark pinkish, very few
lvs., capillary almost
ripe. stem producing
semi root. Bark very bitter,
soft (small)

140

1943 - Colombia

21222 herb.

2423 herb.

wet ground along river

L 24

Liparima

side of ravine above stream

~~And. Bellis~~
9+ cm. tall
cinn. fls.
greenish. fr.
rea. off.~~Psychotria~~

side of ravine

L 26

Cephaelis

L 27

Brownea Diodia cimifolia (Willd.) Brem.

side of trail

L 28

Palicourea

shrub 4 m.

Oct. 13 - 7 am. 1943

L 29

Panicum

rather scrubby, brushy wet
woods, clay soil.

100 m.

L 30

Jussiaea

wet steep in old quarry
trickle of water in old quarry

L 31

common in open wet places

L 32

Polygala

wet banks along road

L 33

Utricularia

wet places along road

L 34

rare, moist bank.

141

shrub 4 m. tall, fls. bluish
suffusecent herb up to
0.8 dm tall fls. white.
very fragrant.slender shrub,
sparsely branched,
slightly aromatic
bottle herb, fls. whitish.small tree 5 m. tall,
buds purple, fruit
blue, fleshy.
fls. white.shrub 4 m. tall,
infl. coral red fls. yellow.

late

2 white

leaves dark green, fls.
white, roots with wintergreen
odor, fls. yellow.
fl. white.

✓ 21222 Rob.

✓ 23 Rob.

wet ground along road

L 21

Liparuna

side of ravine above stream

~~And Bells~~
9+ cm. tall
cinn. fl.
guinea root
fls. off

Psychotria

side of ravine

✓ 26

Cephaelis

✓ 27

Brownea *Diodia coccinea* (Willd.) Brem

side of trail

✓ 28

Peliconrea

stream bank

Oct. 13 - 3000 m. - 100 m.

rather scrubby, bushy wet
woods, clay soil.

L 29

Panicum

wet steep in old quarry

L 30

Jussiaea

trickle of water in old quarry

L 31

common in open wet places

L 232

Polygala

wet banks along road

L 33

Utricularia

wet places along road

✓ 134

rare, moist bank.

shrub 4 m. tall, fls. bluish,
suffrutescent herb up to
0.8 dm. tall fls. white,
very fragrant.slender shrub,
sparsely branched,
slightly aromatic
bottle herb, fls. whitish.small tree 5 m. tall,
bark purple, fruit
blue, fleshy.
fls. white.shrub 4 m. tall,
infl. coral red, fls. yellow.

prostrate

petals white

leaves dark green, fls.
white, roots with wintergreen
odor, fls. yellow.

fl. white.

21235 3
thickets on roadside

36 36
along trail

7 37
common in second growth
in openings

39 39
common in woods

40 40
Psychotria
dense shade

41 41
Lycopodium
in openings

42 42
common everywhere in wet open
places.

43 43
common in shade along
trails

44 44
shaded wet places

45 45
BLECHNUM
common

46 46
Hedysarum
common

47 47
wet banks along road

herbaceous vine, fls.
white, fruit red-purple,
fleshy.
weak herb, 1-2 m. long,
fls. purple.
small tree 6 m. tall,
fls. white, fruit immature
vine

bushy tree, fls. white
ripe fruits dark blue
ripening at different
times in same cluster
fls. whitish, rhizome
brittle, fleshy, shoot
erect, infl. on erect
peduncle.
scrambling

prostrate, fls. yellow.
fl. greenish white.

broad forming a liana
several to many m. long.
faintly aromatic.
small tree, 6 m. tall.
aromatic herb, stems
sharply quadrangular,
fls. blue-violet.

✓ Oct. 14 - 1 km. n. of Junin,

wet forest

Marin

about 2000 m.

L 21248 *Badenbergia* ff. - sp. -

20

✓ Oct. 15 - slope above Laguna de la Cochra, on road to Pasto, just east of the summit, Putumayo
sub-paramo brush, 3200 m.
much *Chusquea* sp.

L 49 *Centropogon ferrugineus*

L 50 *Nertera tetrasperma* HBK.
banks and open ground
by road, abundant

L 51 *Boea*
open flat ground by road, common

Oct. 15 - Encano, Laguna de
la Cochra, Putumayo 3200 m.
steep slopes above village,
soil with deep duff layer
and much humus in
a thick (0.4 m.) layer beneath,
cleared for potatoes, *Ullucus*,
etc. *Cinchona* ^{pidayensis} was once
common here. The stumps
are common and all have
clumps of sprouts. Many

tree 10 m. tall, 20 cm. thick,
fruits pendent.

weak shrub, fls. deep
orange, column white,
anthers bluish.
prostrate, leaves stiff.
fls. yellowish, fruits
fleshy, dark red when
ripe, skin tough, pyrene
4.
prostrate, fls. white.

of the stumps have been
peeled to the ground but
the leaves are still green.
Probably the roots will
eventually starve. Almost
all are heavily infested
and damaged by a
caterpillar.

1943 - Colombia

Mazurales Ridge, 10 km.

Oct. 16 - Chacapava
n.w. of Pasto, near highway to Popayán
Nariño 2800 m.21252 *Cinchona pitayensis*
cleared slope, common
+ 53 *Cinchona pitayensis*
forest on south slopeOct. 16 - Hills s.w. of Chachagui,
n.w. of Pasto, Nariño.
second growth woods, 2100 m.L + 54 *Baronia*
L + 55 *Cinchona pubescens* Vahl

Anal. Bellis
P+C Not. m. tr
Cin 0.4
Qui m. m. tr
T.C.P. 0.4

L + 56 *Guettarda*
L + 57 *Bob.*L + 58 *Munroa*

Anal. Bellis
P+C m. m. tr
Qui m. m. tr
Cin 0.3
Qui m. m. tr
T.C.P. 0.3
Lem. m. m. tr
P+C m. m. tr
Cin 2.2
Qui m. m. tr
T.C.P. 2.2

Oct. 19 - La Cruz, Nariño 2300 m.
cultivated in plazasL + 60 *Populus*
sterile, branches very short
L + 61 *Podocarpus*stump sprouts, growing
vigorously in cleared land.
tree, fruit immature.

shrub 2.5 m. tall, fls. white
sterile stump of sprout
4 m. tall, veins of leaves
reddish. (Dark sample)
sterile shrub 3 m. tall.
sterile shrub, fruit
immature.
vines climbing in trees
fls. greenish, fruit red.
tree 6 m. tall, branched
at base into 3 trunks
about 1.5 cm. thick, leaves
with red veins (Dark sample)

shrub, sterile, branches erect
(short for rest)
small tree, said to have
been brought from nearby
forests.

Oct. 19 - La Cruz, Nariño, 2300 m.
along weedy trail in low
second-growth brush on
top of dry ridge of volcanic

71 62 Hedysarum
shaded dry bank

63

64 Scroph

65 Vaccinium

66 Myrsinaceae

dry vertical earth bank.

67 Pellaea

dry vertical earth bank

68 Cheilanthes

dry vertical earth bank

69 Pellaea ternifolia

dry vertical earth bank

70 Blechnum

Oct. 20 - ridge between
Río Tiquimbina and quebrada
del Salado, 5 km. E. of Volcán
Dona Juana.

Nariño, 3000 m.

wet ridge, upper part worked,
lower cleared in pasture,
with bushy fence-rows.

shrub 3-4 dm. tall, fls.
white, pinkish outside.
low spreading shrub,
fls. vermillion without,
orange within, column coral,
anthers tan.

suffrutescent herb up
to 1 m. tall, fls. magenta.
leaves 4-ranked.

spreading shrub up to
1 m. tall fls. deep coral
red with green tips.
bracts pinkish green.

Cinchona pitayensis
is occasional here, mostly
saplings, as all large
trees have been cut for
bark. Over a 'th' of root
bark has been taken out
in tiny lots since left. c.
most of plants show a trace
of ruberulence on petioles, vein d.

212708 *Fuchsia*

" brushy fence - now in pasture.

L 71 *Palicourea*

common in brushy fernaceous in pasture.

L 72 *Calceolaria Lehmanniana* Kramz. along trail in forestL 73 *Cinchona pitayensis* steep e. slopeL 74 *and* level ridge top.L 75 *and*

a log in forest

L 76 *Palicourea* common in forest.L 77 *and*

on log in forest.

L 78 *Cinchona pitayensis* dense forest on steep east slope, deep humus.L 79 *Cinchona pitayensis*

dense forest, steep east slope

L 80 *Cinchona pitayensis* dense forest, steep east slope deep humus.Mt. Molan
1978

shrub 2.5 m. tall, infl. drooping, hypanth. rose-color, sepals reddish-green, petals bright crimson.

shrub 3-4 m. tall, fls. dark purple outside, pale lavender within, fruit immature. infl. yellow fl. white, sometimes with purplish tinge.

sapling 3 m. tall, leaves with conspicuous pits in axils of ~~veins~~ veins.

herb up to 1 m. tall, buds orange, corolla pale cream-yellow, funnel-form, infl. drooping somewhat, fruit immature, sepals maroon-purple, lips white.

shrub 3 m. tall, infl. blue-green, ripe fruit dark blue.

fls. whitish.

sapling 4 m. tall, sterile, trunk 5 cm. thick (bark sample) (bark sample) (bark peels easily)

sapling 2 m. tall

sterile sapling 6 m. tall, 6 cm. thick (bark sample, peels easily)

Anal Bellis
f+c 1.7
cm 2.4
pm 0.5
T.C.H 4.6Anal Bellis
f+c 2.1
cm 2.1
pm 0.4
T.C.H 4.6

Oct. 21 -

2 km. above San Bernardo,

Nariño 2200 m.

Cinchona pubescens Vahl
edge of ravine above stream
in flat valley bottom, gravelly
soil.Anol Bellis
9-10 mm. in
cm 1.2
mm 1-2
T.C.A. 1.2Oct. 21 - ^{stage}
Río Guina, across from
San José, Nariño 2000 m.
Cinchona pubescens Vahl
steep cleared slope, thickets
of second growth.Anol Bellis 32
9-10 mm. in
cm 2.6
mm 1-2
T.C.A. 2.6Oct. 22 - 6 km. e. of La Unión
on road bet. La Unión and
Cartago, Nariño 2030 m.C. pubescens Vahl
roadside on steep slope
in open.Anol Bellis
9-10 mm.
cm 1.7
mm 1-2
T.C.A. 2.1Oct. 22 - 5 km. s. of Timbío
Cauca
7 thickets along ravine.
second growth 1850 m.Anol Bellis 34
9-10 mm. in
cm 0.6
mm 1-2
T.C.A. 0.6Cinchona pubescens Vahl
Oct. 23 - 6 km. n. of Popayán,
Caucapasture with young growth along road 1850 m.
C. pubescens Vahl
common in small second
growth along road near streamC. pubescens occasional in thickets
+ along ravine banks in valley bottom.15 cm. thick,
tree 6 m. tall, leaf veins
reddish, (bark sample).
tree injured both by boars
and by chipping.C. pubescens occasional, but
most of region cleared ^{occurred} 2400-7400 ft.
Tree 8 m. tall, 15 cm. thick,
fls. fragrant, coral red
outside, pale pink inside.
(bark sample)C. pubescens common in patches
of second growth + along roadsides.tree 10 m. tall, 20 cm. thick,
sterile. (bark sample)Cinchona pubescens common,
good sized trees, up to 15 m.tree 7 m. tall, 12 cm. thick,
old leaves red (bark sample)sapling 4 m. tall. fls. pink,
fragrant.

✓ Oct. 26 - Rio Santo Domingo, 12 km.
e. of Tocuyos, w. slopes of
Nevado del Huila, 21 km.
e.e. of Corinto, Caucan
rain forest on steep slope
21286 *Cinchona pubescens* Vahl

2800 m.
Anal. Bills
9+C 0.4
Cin 2.2
T.C.A. 2.0

L 87 *Cinchona pitayensis*
firable gray-brown soil
with thick duff layer
L 88
L 89
L 90 on log
Galium
partially cleared rain forest
L 91
✓ Oct. 27 same loc.

2960 m.
Anal. Bills
9+C 2.0
Cin 2.2
T.C.A. 5.0

2800 m.

2900 m.

2700 m.

2800 m.

L 92 *Cinchona pubescens* Vahl.
steep slope on wall of canyon
L 93 *Cinchona pitayensis*
steep slope on wall of canyon
L 94 *Pilea*
L 95 *Urticaria*
canyon wall

Anal. Bills
9+C 1.6
Cin 1.1
T.C.A. 2.7

Anal. Bills
9+C 1.9
Cin 0.6
T.C.A. 0.8
T.O.A. 6.3

Hymenophyllaceae and
tree ferns surprisingly scarce.

tree 15 m. tall, 3 dm. thick
leaves green, fruit
mostly immature
(bark sample)

small sterile sapling,
5 m. tall, 6 cm. thick
(bark sample)

fls. white

fls. white, fragrant

roots orange, plant
prostrate

forming loose tangles
slender shrub, 4 m. tall,
fruit green.

tree 15 m. tall, 3 dm. thick,
fls. pink, fragrant
(bark sample)

tree 10 m. tall, 1.5 dm. thick,
fls. purple, green fruits
much larger than dry ones
(Davis says there is a flora blpt)
(bark sample).

erect herb 1 m. tall
tufts

21296 *Botrychium virginianum*
"vega a bendy, aldy river, rare."
L 97 1 steep slope

L 98 *Psychotria*
near stream, along trail

✓ Oct. 27 - same loc. 10-11 km. e. Tocuyos
cleared part of valley
young second growth

L 99 *Gallium hypoleucum*

21300 *Davallia*

L 01 *Dysphania*

L 02 *Leptophis*

L 03 *Myrsica*

L 04 *Gonzalagunia*
scattered in pasture, valley bottom

L 05 *Cola de zorro*

L 06 *Fuchsia*

L 07 *Lippia*

✓ Oct. 28 - Rio Palo bet. El Palo
and Tocuyos.

Cavaca 1300 m.

L 08 *Tephrosia toxicaria*
common on brushy cleared (steep)
slope.

tree 10 m. tall, 10 cm. thick,
corolla green.
herb 1 m. tall, fls.
greenish white

vine-like, fruit orange, fleshy,
"cicuta", said to be very poisonous.
prostrate to ascending.

plant grayish, fls. white

herb, 1 m. tall, fruits
fleshy, white.

shrub 3 m. tall, almost
odorless.

shrub 2.5 m. tall, fls.
whitish, fruit gray, fleshy.

shrub 2 m. tall, fls.
yellowish green.

shrub 2.5 m. tall, fls.
scarlet.

shrub 2.5 m. tall, fls.
yellow, fruit rose-pink,
plant unpleasantly
aromatic.

erect herb, up to 1 m. tall,
roots thick, woody, fl. cream-white,
variable to reddish. (root sample)

Oct. 29 - Palomina, El Valle
grounds of experiment
station, cacao plots. 925 m.

21309 *Theobroma cacao* L.

4 10 *Theobroma bicolor* H. & B.
(said to have been brought
from the Chocó.)

The two above species may
be distinguished by the

T. cacao

habit	spreading
leaves	oblong, green on both sides
inf.	scarce, palmately veined at base reduced to fasciate, on old wood
flwr. sta	cream
petals	3 mm. long, with yellow terminal appendage 6-7 mm. long, strongly clawed
stamens	3 mm. long
staminode	9 mm. long, linear, acute, erect
pistil	4 mm. long, red red-papillate
fruit	glabrous, ^{hairy} glossy, broad-puriform, pointed ridges rugose, furrows smooth

5 11

parasitic on *Theobroma cacao*

tree, low and spreading,
leaves hanging vertically,
green on both sides, fls.
cream color with maroon
staminodes.

tall, erect tree, leaves hanging
vertically, almost white
beneath, fls. dark red
with maroon staminodes,
fruit oblong, green, with
the furrows strongly
rugose.

following contrast:

T. bicolor

erect
ovate-cordate, white beneath, strongly palmately veined. open, cymose, at petioles.
dark red
2 mm. long with maroon terminal appendage 1 mm. more long, this almost sessile.
2 mm. long
5 mm. long, oblanceolate-acute, somewhat spreading.
2.5 mm. long, minutely white-papillate papillate appearing velvety, oblong, blunt to slightly retuse, ridges smooth, furrows deeply longitudinally rugose.
sub-scandent, lvs. green.
fls. dull orange, fruit immature.
"mata pels" serious part.

✓ Oct. 31 - 5 km. s. of Bugalagrande,
El Valle ^{900 m.}
flat valley floor, thickets
in low places.

L 1312 Hamelia

✓ Oct. 31 - 5 km. n. e. of Filandia
on highway from Pereira to
Armenia! ~~El Valle~~ Caldas 2050 m.
second growth thickets on
steep slope

L 13 Cinchona pubescens Vahl

L 14 Guettarda

L 15 Lygopodium

L 16 Phrygala
grassy roadside bank
~~Opposites~~

✓ Oct. 31 - just n. e. of Circasia
w. of Salento, on road
from Pereira to Armenia, ~~Colombia~~
Caldes ^{1700 m.}

L 17 Cinchona pubescens Vahl
shade tree in coffee plantation

L 18 ~~Parasitic~~
parasitic on *Cinchona pubescens*

L 19 *Cinchona pubescens*
second growth thickets.

sub
ht range.

shorts

fls.
black,
-

with

patches
of plants
of common,
good size.
tangled
- pink,
purple)

man green, over white.

shrub tree 8 m. tall

Oct. 31 - 5 km. s. of Bugalagrande,
El Valle
flat ~~alt. 1000 m.~~ 900 m.

21312

Brothbeck

UPB #1 = 759

" 2 = 760

L 13

" 3 = 761

L 14

Rodriguez 302
(Aicardo) 319

10

11

L 17

L 18

L 19

parasitic on *Cinchona pubescens*
Cinchona pubescens
second growth thickets.

and other
m. 22
el. 10
so. 20
rh. 1.0

hilly country with patches
of second growth and coffee planta-
tions. *C. pubescens* very common,
mostly sprouts, but some good aged trees.
Tree 1 m. tall, half strangled
by a ~~big~~ tree, fls. pink,
fragrant. (dark sample)
plant green, fruit white.

slender tree 3 m. tall

brittle slender shrub
3 m. tall, fls. bright orange.

clump of sterile shrubs
5 m. tall.
shrub 5 m. tall, fls.
white, ripe fruit black,
mostly not ripe.

fls. purple, root with
wintergreen odor.

✓ Oct. 31 - 5 km. s. of Bugalagrande,
El Valle ^{900 m.}
flat valley floor, thickets
in low places.

✓ 11312 *Hamelia*

✓ Oct. 31 - 5 km. n. e. of Filandia,
on highway from Pereira to
Armenia! ~~El Valle~~ ^{Caldas} 2050 m.
second growth thickets on
steep slope

L 13 *Cinchona pubescens* Vahl

L 14 *guettarda*

L 15 *Lycopodium*

grassy roadside bank

L 16 *Polygala*

grassy roadside bank

~~Oppositoria~~

✓ Oct. 31 - just n. e. of Circasia
w. of Salento, on road
from Pereira to Armenia, ~~Caldas~~
Caldas ^{1900 m.}

L 17 *Cinchona pubescens* Vahl
shade tree in coffee plantation

L 18 *andreaea*

parasitic on *Cinchona pubescens*
second growth thickets.

and Andreaea
sp. 10
2000 m.
TEA. 100

little slender shrub
3 m. tall, fls. bright orange.

clump of sterile shrubs
5 m. tall
shrub 5 m. tall, fls.
white, ripe fruit black,
mostly not ripe.

fls. purple, root with
wintergreen odor.

hilly country with patches
of second growth and coffee planta-
tions, *C. pubescens* very common,
mostly sprouts, but some good specimens.

Tree 10 m. tall, half strangled
by a ~~big~~ tree, fls. pink,
fragrant (dark sample)
plant green, fruit white.

slender tree 8 m. tall

Nov. 1 La Aguadita

Cundinamarca

L 21 320 *Anguria* wooded ravine in pasture

L 22 *edge of second growth woods*

L 23 *Cinchona officinalis* steep side of ravine

L 24 *Palicourea* shade on side of ravine

L 25 *Psychotria* shade on side of ravine

Nov. 5 - Canyon of Quebrada ^{Aguafría} ~~Malagana~~ below San Agustín, road from Bogotá to Fusagasugá

Cundinamarca

L 26 *wall of canyon, wet forest*

L 27 *Cinchona officinalis L.* steep slope

L 28 *Oak* epiphytic on leaning tree-trunk

L 29 *Cinchona officinalis L.* steep slope, varaximal

clump of slender shoots
about 6 m. tall, stems
brittle, fruits immature

herb up to 1 m. tall,
fruits pale purplish, infl
purple.

erect herb, 1 m. tall, fruit
white

Cinchona officinalis scattered
through the forest, mostly
small trees, being
harvested.

sterile tree 5 m. tall, 1 dm.
thick, leaves glossy, larger
than usual.

sprawling herb up to
1 m. long. fls. bright
crimson

Tree 6 m. tall, 9 cm thick,
fruits immature. All trees
seen in fruit have the
large spreading calyx
that this has.

Nov. 15 - Agua Bonita, above
La Aguadita, on road bet.
Bogotá & Guasca, cushion
grazed clearing

21, 27 *Habenaria undata*

Nov. 16 - 5 km. s. of Pandi, 7 km.
s. s. Lengua, ~~between~~ w. s. of Rio
Lumapay, Tolima

22 *Scaphyglottis*
coffee plantation

29 Coambuena
rocky bluff

Nov. 17 - Aurora, 12 km. e.e. of
Cunday, upper Rio Vichía, Mun. de
Cunday, Tolima

30 *Habenaria magnipolia*
wooded ravine, abundant

Nov. 17 - La Colonia Agricola,
11 km. e. of Andalucía, w. slope
of Cordillera de Altamira, Mun.
de Cunday, Tolima

31 *Elaeagis utilis* 2000 m.

recently cleared pasture
formerly wet forest.

small bushy tree 4 m.
tall, leaves quite
polymorphic

1000 m. - scandent shrub, fls.
pink

1900 m. - sterile sapling 8 m. tall,
leaves glaucous

tree 25 cm. thick, 10 m. tall,
others much taller.

tree 6 m. tall, old leaves
red, fruit terminal on
dead twigs. (the trees
seen several times as
tall) buds in thick
gum

L Nov. 13 - Headwaters of Rio Cuinde Far,
8 km. n.e. of La Colonia Agricola,
13 km. e. of Andalucia, w. slope
of Cordillera de Altamira.
7 km.

31, 32 *Cinchona pubescens* Vahl
sparse second growth in
pasture, wet forest

L 33 *Nectera granadensis*
very abundant on logs and
ground in recently cleared
land.

L 34 *Cinchona officinalis*
common in ^{the} second-growth
wet forest on more or less
flat-topped ridge, deep
duff layer

L 35 *Palicourea*
fern row in pasture cleared
in wet forest

L 36 *Centropogon*
thickets in second-growth
rain forest.

C. officinalis is common
locally on the benches and
slopes of the Cordillera de Altamira,
but is rapidly being cleared out
of the farms that lie to aqueducts.
Tree 3 m. tall, usually two
sprouts out of an old
stump ^{which} ~~had~~ been
removed up to about 3 m.
but had grown back
to form a thin layer
leaves purplish red
beneath, especially the
veins. Old leaves red
"guinea roja"
ground, forming a mat,
fruit red, fleshy, fls.
greenish

2000m. stump sprout 9 m. tall.
5 cm. thick, old leaves red
veins more or less reddish,
leaves more or less dull
above. (all plants seen
were sprouts) (but sample)

2100m. small tree 6 m. tall, infl.
yellow, fls pale yellow.
fruit blue-black.

~~Gramineae~~ shrub, fls.
deep orange, column white.
anthers blackish, anthers
fruit subglobose.

Nov. 18 - w. slope of Cordillera
Cordillera de Altamira,
bet. headwaters of Rio Cuindo
Fes and Rio Cuindo Blanco, 5000
km. e. of Andalucia, Mun de
Cunday, Tolima 2160 m

L 1337 *Palicourea*
second growth thickets, rainforest

L 1438 *Palicourea*

L 1439 *Cephaelis*

L 1440 *Lobelia*

Nov. 19 - ridge bet. Rio
Cuindo Blanco and Rio Cuindo
Fes, 9 km. e of Andalucia,
Mun de Cunday, Tolima 2100 m
flat topped ridge, wet second
growth.

L 1441 *Lobelia*

slender shrub 5 m. tall,
infl. reddish-flesh-purpl.
fls. purplish pink
fruit immat., fruiting
infl. drooping.
shrub 2 m. tall, infl.
coral red, fls. bright purple.
shrub, 1 m. tall, infl.
bright purple, fruit
fleshy pale blue lavender
erect herb, fls. ~~orange~~
red, scarlet, anthers ^{dark} brownish

sprawling herb w. 2.5 m.
long, corolla scarlet, with
lobes yellow, column
yellow, anthers with
connective red, naked
brownish

Nov. 18

Guineos in region bet. Rio
Cunapay and drainage of
the Cunday - down around
6500 ft. *C. pubescens* ~~occurs~~
occurs where any second
growth is left, though
most of this is cultivated
as in pasture. Apparently
formerly there was a
belt bet. 7500 ft. and
3100 ft. or more where
C. officinalis ~~occurred~~
locally mostly in
"manchas." This area is
larger than might
be expected because of
the prominent plateaus
and benches in the topo-
graphy. Now most of
this has been harvested,
excepting in the most
inaccessible places, and
the guineos are going
back after the sprouts
that they left the first time.
The form found here is
the same as that found
as far northeast as La Laguna
de Dita and Agua Bruta
above Tumacoa.

Other places suggested
for exploration -
In talking with the
guineeros in the western
Cunapay region, there
were mentioned as places
as yet unexplored the
southern Cordillera de
Altamira, from La Colina
south toward Dolores -
said to be inaccessible
from lack of trails. The
headwaters of the Rio
Riachon were mentioned
and the region of Santa
Ana Huila, east of
the Cordillera Gigante.
The headwaters of
the Rio Duda are being
much talked of. A
piece of *C. officinalis*
bark was shown me
from there in August by
the Inspector of Police, Dr.
Mejia, in La Concepcion.
One of Robertson's men
has been about 7 days
down from the headwaters
of the Duda and brought
back *C. pubescens*, with
reports of enormous
quantities.

✓ Nov. 21 - Hills west of Laguna
Guatavita
sub-paramo bush, ^{Cardinamace}
gentle slope, 2900-3000 m.

✓ 4342 Castilleja
thicket, common

L 43 Stevia
common along trail

L 44 Stevia
occasional along trail

L 45 rare along trail

L 46 Salvia
common in patches

L 47 Cestrum
occasional

L 4848 ~~Lippia~~ Bephaea
occasional

L 49 Gentiana
in open places

weak shrub 1.5 m. tall,
upper bracts and calyx
red in distal two thirds,
corolla green above, yellow
beneath
- ~~somewhat~~ sticky suppetent
herb, m. tall, fls. whitish
- turning pink
- very sticky suppetent
herb, m. tall, fls. reddish
- with conspicuous white
style
- decumbent herb, m. long
ascending distally, fls.
- white
- ranks growing bushy
herb, m. tall, leaves very
rugose, calyces blue-black,
corolla blue
- shrub 1 m. tall, fls
greenish white, lobes
larger
- shrub 1.5 m. tall, fls
rose-pink, not sticky,
leaves white beneath
- fls pale purple with
dark markings especially
toward base

21350 *Apium*
openings, occasional

L 51 *Copelaria*
common in openings and
rocky places

L 52 *Hedypnois*
common in open places

L 53 *Pachycaulus*
common in open places

L 54 *Crocosmia*
in thickets on top of hill

L 55 *Micromia ligustrifolia*
common

L 56 *Grapholita*
occasional in rocky ledges
at top of hill

✓ Nov. 21 - slopes of Laguna Quatarto

2900m.

grassy, weedy slopes, occasional
patches of brush, grazed

L 57 *Daucus*
under small tree, steep slope

L 58 *Cardamine*
under small tree

L 59 *Weinmannia*
brush patch, rocky place

L 60 *Elaphoglossum*
rock ledges

loose clumps, strong
~~odor~~ celery odor when
broken.

almost acaulescent
rosette inflorescence
strictly erect, fls. yellow
erect shrub up to 0.8 m. tall,
leaves pale beneath.
rosette bluish-green,
fls. white.

shrub up to 0.8 m. tall
fls. greenish yellow.

shrub 2-3 m. tall, compact,
~~odor~~ fruits dull bluish-green,
white

erect, bracts brownish
white

fls. white

shrub 2-3 m. tall, fls.
whitish, fragrant but
not pleasantly so

176 1943 - Colombia

✓ 7301 *Baeckea*
occasional along ravine
✓ 62 *Juncus bufonius*
grassy place
✓ 63 *Mutisia*
climbing in brush
✓ to 64 *Calatium*
common

✓ 65 *Alchemilla*
common among grass
✓ 66 *Carex*
common in edge of water
✓ 67 *Alchemilla*
common among grass
✓ 68 *Galium*
rare among grass
✓ 69 *Daymaria*
one plant in large crevice
under rock.

Nov. 22 - Chocchi.

Cordilleran area
1950 m

✓ 70 *Cordia*
weedy cultivated field
✓ 71 *Cordia*
✓ 72 *Borreria*
✓ 73 *Centaurium*
✓ 74 *Ambrosia*
most abundant plant in field
✓ 75 *Croton*
✓ 76 *Malva*

177

shrub 1 m. tall.

heads pendent, rays
scarlet
erect herb up to 1.5 m. tall
upper stems & involucres
maroon purple, rays deep
brilliant purple, disk
dull reddish yellow
decumbent to erect
small clumps.
decumbent to erect
prostrate from thick root

fls. white
oily odor when broken
fls. pinkish
perennial
small spreading tree
fls. white

21370 *Polygonum*

Nov. 23 - 3 km. E. of Choachi,
along Quebrada Salitres,
Alto de Choachi, Cundinamarca
second growth woods. 2300-2550 m.

L. 77 *Liphorampyleus*
second growth brush

2300 m.

L. 78 *Duranta*

2300 m.

L. 79 *Talicourea*
rather open forest

2550 m.

flo. white

Completely denuded up to
about 2400 m., some brushy
second growth below that.
C. pubescens has been
abundant here, but a
large part has been
harvested. At about
2550 m. *C. officinalis* of a
peculiar type starts.
It is localized in manchas.
Vargas and Brodbeck say
that harvesting of *C. officinalis*
has scarcely begun
here, and that there should
be production for a year.
The forests extend, at these
altitudes, north to Mounds
Nuevos.

scrambling branched
shrub, corolla bright
crimson red, column white,
anthers blackish.

spiny shrub 3 m. tall,
leaves glossy & somewhat
rugose above, dull & paler
beneath, flo. white

shrub 3 m. tall, branches
weak, flo. and inflorescences
purple.

✓ 330 *Cinchona officinalis* L.
in rather open forest on steep southeast slope, several trees here in a group in "mancha":

bark sample taken, checker-boarded & roughly cut into 3 equal samples, for a drying experiment. One part is to be dried in sun, one in shade, and one left.

Anal. Bellis	
dried in shade	
q + c	3.6
(9.504)	1.7
air	1.5
sun	1.6
T.E.A.	4.0
dried in sun	
q + c	2.7
(9.504)	1.9
air	1.3
sun	1.6
T.E.A.	4.0
Rotated	
q + c	3.1
(9.504)	1.6
air	1.1
sun	1.6
T.E.A.	3.2

tree 20 cm thick, 15 m. tall, leaves glossy above, with reddish veins margin tending to be revolute, stipules reddish & green, erect, rather caudate-angled, fls. deep purple with white hair, tending to be ascending in the cluster, fruits thick, slightly compressed. (This plant in many ways approaches *C. pitayensis*, especially in the shape of the fruit, though the latter is not strongly ribbed. The small stipules are not like those of *C. pitayensis* nor *officinalis*, but more resemble those of some forms of *C. pubescens*). "guinatuna" tree 15 cm. thick, 17 m. tall, veins of leaves reddish, stipules green, erect, becoming strongly revolute, "guava roja".

Bark sample checker-boarded into 3 equal parts, one to be dried in sun, the other in shade. root yellowish, plant low spreading but not prostrate.

✓ 331 *Cinchona pubescens*
lower edge of forest, rather mature second growth, quite common but mostly harvested already.

Anal. Bellis	
Sample dried in sun	
q + c	0.61
air	1.23
sun	1.23
T.E.A.	1.94
Sample dried in shade	
q + c	0.62
air	1.39
sun	1.39
T.E.A.	1.95

✓ 332 *Galium*
lower edge of forest

Anal. Bellis

Nov. 24 - Crest of Cerro de Forte, district of Ferrolarada
10 km. n.e. of Choachi, Mun.
de Choachi, Cundinamarca
moist woods. 2600 m

21353 *Ladenbergia undata*
common on e. slope

~ 24 - rare in shade, terraced
85 *Cinchona officinalis* L.
scattered in woods on
e. slope.

~ 26 *Syzygium*
common in ridge top brushy
forest.

~ 37 *Cinchona officinalis* L.
scattered in woods on e. slope

Nov. 25 - Choachi
Cundinamarca

1790 m

88 *Salix*
in yard, abundant in region

tree 20 cm. thick 1.5 m. tall,
others much larger
seen. "aguano"
crest, fls. greenish
slender tree, 10 cm. thick
1.5 m. tall, sterile,
shrub 2-3 m. tall, fls.
rose-pink, with 2 white
stripes on each of corolla lobe.
tree 11 cm. thick, 1.5 m. tall,
bark being harvested.

tree with weeping habit.

Dec. 5 - w. slope of Peña Blanca,
8 km. e. of El Colegio, 35 km.
w. of Bogotá, Cundinamarca
2000-2100 m.
wet forest with many epiphytes

with
Epiphytes

11389 *Cinchona pubescens* Vahl
along stream common locally.

2000 m.
Anal Bitter
1/2 - none
cm - 2.4
mm - 0.6
T.E.A. 2.4

13 90 *Hydrocotyle*
wicks along a stream

2000 m.

13 91 *Psychotria*
undergrowth on steep slope
11 92 *Cinchona officinalis*,
steep slopes, common

Anal Bitter
1/2 - 1.9
cm - 1.5
mm - 0.1
T.E.A. 3.5

slopes above 1900 m. well
wooded. a considerable stand
of *Cinchona* at about
2000 m. in the bottoms of
gullies, the trees all
more or less reduced
above this. On slopes
is considerable t. officinalis
of the usual large and
var. from this region.
Trees up to 7.5 cm. in diam.
& many smaller, but
no seedlings. Collected
a bark sample of each
with bark, sp. & ~~several~~
several without, these
under *Valerianas* var.

tree 40 cm. in diam. 1.5 m.
tall. top dead, dead spot
in bark of trunk, loaded
with epiphytes. few
leaves red. (Bark sample)
(Valerian 1/30 is bark sample
from similar tree nearby).
prostrate

herb, on tall inf.
purple, fruits dull blue.
tree 30 cm. thick, 2.0 m. tall.
leaves green, very few red ones.
(Bark sample) (other is from other
tree under *Valerianas* var.
V131, V132)

186

187

1947 - Colombia
coll. J. S. Granger

1. n. *Macrocarpium*
Near Rio Negro, Trail from Bolívar to
San Sebastián, Cauca.

2. n. *Cinchona officinalis*
Reg. of alto Cauca. sent in
by correspondent from the Andes.
(~~not~~ exact origin not certain
anal. bellis)

3. n. *Eleagia*?
above El Carmelo, near Santafé, Cauca

7 *Cassia*
near Los Milagros, road from
Bolívar to Rio Milagros, Cauca
"galvis" tree 3 m. tall, 20 cm. thick.

8 *Cassia*
Los Milagros, Cauca, Cord. Centr.

9 *Cupu*
Los Milagros, Cauca, Cord. Centr.

10 *Paletaria*, Cord. Centr. Cauca

11 *Heliconia*

12 *Liparina*

251 fl. yellow-orange

252 fl. wine

259 *Bomarea*
from vines of P. José Menadje
tuber called "sachapata"

260 ~~258~~ *Bomarea*
"sachapata"

261 *Colchicum*

La Cudillero de El Letero

262 *Ladenbergia*
fl. white

263 ^{with} ^{P. Hurtado} *Ruellia* Region of Cerro de San Pedro,
Cord. Ocs., w. of Rio Patia, Cauca.

271 *Rondellia*
~~26~~ Casas de Abel Solarte,
Divisos Chicaos
shrub with fl. w. red

190 1947 - Colombia

J. S. Grange

273 *Passiflora*
El Boquerón, above Río Guavas,
n of San Pedro

274 El Boquerón

276 *Cinchona pitayensis*
El Boquerón278 Los Pesitos, mtns central de
Los Cerillos, head of Río Guacito
shrub 3-4 m. tall, fl. yellow,
infl. 1 m. long.279 *Cinchona pitayensis*
n. side Cerro San Pedro, ~~to~~
trail from Boquerón to Angelia280 *Psychotria*282 *Condaminia corymbosa*291 *Psychotria*
El Boquerón292 *Rondellia*
trail to San Alfonso from La Mesa
"haujón de los Andes"293 *Cinchona*
Buenos Aires, garganta de la
Cordillera sobre San Alfonso

191

294 San Alfonso, cord. Oce.
w. of Río Patia
Clematis
"bejucos alcalí"295 *Condaminia corymbosa*
Río Capitanes, trail
from Patia to San Alfonso

1844

Municipio de Santa Rosa,
upper Río Caquetá, Caucá
500 *Cinchona officinalis*
above house of Cenon J. Rivas,
Cordillera la Coledad
tree 10 m tall, 30 cm thick
"guina roja"501 *Cinchona officinalis*
El Carmelo502 *Cinchona officinalis*
above property of Juan J. Méndez,
~~to~~ Rincón de Cuchilla de
Quelradillas, El Carmelo
tree 5 m tall, 5 cm thick503 *Cinchona officinalis*
same "guina tina"504 *Cinchona officinalis*
same "guina tina"505 *Cinchona officinalis*
same "guina tina"

192 1944 Colombia J. A. Gray

506 *Cinchona officinalis*
above casa de Felisa Cruz,
Las Mesitas
"guiso roja" tree 7 m. tall,
15 cm. thick.

1943 Colombia

193

J. A. Gray & L. Rodriguez

IV
Tina los Nudos
from near Filvia, 5300 m.
3 Cord. Central, Cauca.
1 *Calceolaria*
"boca dragon"

2 *Podocarpus*
"chaquiro" or "pino"

3
4 *Euphorbia peplus* L.
5 *Oxalis*
"chileo"

6 *Galium*
"raicilla"

7

8 *Momordica*

9 *Burmeistera*

10

11

12

13

14 ~~*Cuphea* *peppera*~~ no omitted

15 *Castilleja*

1944
1945
1946
1947
1948

194 1947 Colombia
Granger & Rodriguez

16

17 Fuebrisia

18 Asplenium

19 Rubus

20 ~~Collomia~~

195

196

197

198

199

1943 - Colombia
collections made for me by others

~~Brodbeds #~~

Cinchona pitayensis

s. w. slopes of Nevado del
Hilario above Tacueyo, bet.
Río Santo Domingo + Guadalupe
San Luis, drainage affluent
of Río Pávlo, Cauca 2500-2800 m.
Brodbeds #1, #2, #3.

Cinchona pitayensis

at base of Volcán Pico
Juana, drainage of Río
Tapumbina s. e. of La Cruz
(specimens brought in with
bank by a gunner)

Oct. 19, 1943

Cinchona pitayensis

base above La Gerard,
Río Mayo drainage, n. e. of
La Cruz, Nariño
(specimens brought in by
gunner) Oct. 17 1943

Cinchona pitayensis

slopes of Volcán Pico Juana,
s. e. of La Cruz, Nariño
(specimens brought in by
gunner) Oct. 18, 1943



